RAINFALL
in the
BRITISH ISLES
IN 1863.

BY G. J. SYMONS

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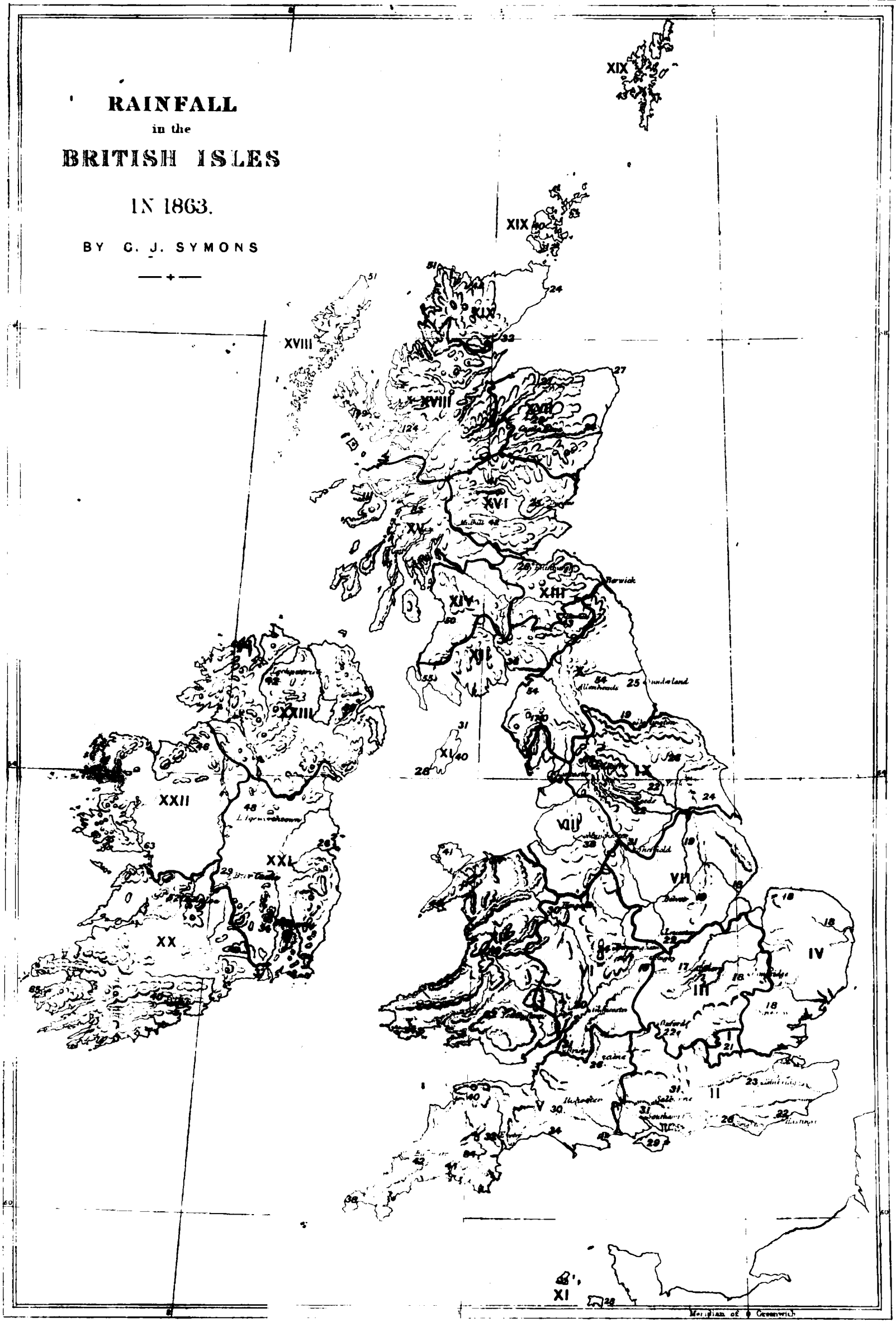

BRITISH RAINFALL.

ON

THE DISTRIBUTION OF RAIN

OVER THE

BRITISH ISLES,

DURING THE YEAR

1863,

AS OBSERVED AT ABOUT 700 STATIONS IN GREAT BRITAIN AND IRELAND,

WITH COPIOUS REMARKS, AND INDEX MAP.

COMPILED BY

G. J. SYMONS,

Member of the British and Scottish Meteorological Societies.

LONDON:

EDWARD STANFORD, CHARING CROSS.

1864.

EXPLANATION OF MAP.

Intended at first merely as an index map to render it more easy to find the rainfall of any required district in the general tables—by means of the Roman numerals denoting each division—it is hoped that its value has been heightened by the insertion of the depth of rain at a few stations in 1863. The names of the stations have only been given when inland, or *occasionally* on the coast, the object being to avoid crowding and present an outline of the distribution of rain, rather than elaborate details.

BRITISH RAINFALL.

The facts, that the number of contributors to these tables has increased more than five-fold in the past four years, and that it is now quite an exception to find a gauge of which the indications are not herein quoted, best attest the opinion of the observers as to their utility; an opinion in which it is the author's pleasure to know many of the most distinguished men of science concur. He therefore trusts, not only that these annuals may be considered as permanently established, but also by the steady pursuit of the lines of research indicated in the "Report," that he may be able still further to develope the practical bearing of rainfall observations on manufacturing, engineering, agricultural, and sanitary questions.

Having in the tables for 1862 described them as "the product of his leisure hours," it may not be inappropriate for the author to state that they are so no longer. The development of the inquiry being so rapid that he has been compelled to resign either his other engagements, or "British Rainfall" in all its branches. Unpleasant as it was financially, he did not for a moment hesitate, rather to sacrifice his pecuniary prospects, than abandon an investigation, the ramification and importance of which we cannot yet see.

G. J. SYMONS.

129, Camden Road Villas, N.W.,
February 6th, 1864.

REPORT.

In continuing the "report" in our last annual, by a summary of work done in 1863, it is satisfactory to know that our progress has been unchecked.

EXAMINATION OF RAIN GAUGES.

The examination of rain gauges before transmission to the stations has been commenced, and the still more useful examination of them and their positions when erected, has been steadily pursued. About 100 have been examined before dispatch (including some to the colonies), and forty-three have been tested *in situ*. They are all marked by the * in the general tables, and but few require special note. The first examined in 1863 was Colney Hatch Asylum, where a very accurate gauge has been for many years placed on the roof of the main buildings, 40 feet above the ground. The amount collected by it is nearly if not quite equal to the probable fall on the ground in that locality; a similar result is found at Castle House, Calne, where the gauge is 32 feet above the ground. In both cases, the bulk, if I may so term it, of the edifices is considerable, and it has always struck me that in such cases the customary diminution with height does not hold good. To take an instance from the examinations in 1862:—Messrs. Marshall's gauge at Holbeck, Leeds, placed on the roof of their factory, 32 feet above the ground, collects the same as the one belonging to the Water Works close by, and on the ground level. But Messrs. Marshall's factory roof is remarkable for being no less than two acres in extent, and covered with earth and grass, above which the gauge is only elevated 4 feet. May not so extensive a plateau be regarded as the ground level for that gauge? But the full consideration of this question will come more appropriately along with the discussion of the Calne experiments, hereafter to be described.

The gauges in South Devon, mostly erected by Mr. Treby of Goodamoor, proved well placed and generally accurate. At Dartmoor Prison, two new gauges are now quoted, both of which are correct—one being near the top of North Hessary Tor, the other nearly at the foot, opposite the Prison gate. The observations prior to 1862 were from a gauge placed on the roof, which, though I could not test, is certainly incorrect. In order, however, to ascertain its error approximately, the Hon. Captain Best has kindly undertaken that all three shall be recorded for some time,

so that we may, if possible, render available the observations during the years when the roof-gauge alone was at work. The old gauge at Tavistock is similar to that at Dartmoor, and equally unsatisfactory. The fall quoted this year from another gauge may be better, but the returns for 1864 will be from a tested gauge of the best construction, a site for which has, I believe, been provided by the agent of the Duke of Bedford. The gauges at Torrhill and Ham being incorrect, remedial measures have been adopted at both stations, as though not seriously wrong, I would fain have them absolutely correct. At Torquay, the gauge which had been previously suspected, proved very untrustworthy; it was warped nearly half-an-inch out of the true circular form, and besides this, was in a bad position; as it was, however, the best the grounds afforded, a fresh station has been established in another part of the town, under the care of Mr. Pengelly. At Teignmouth, whence the returns were suppressed last year, the position was very bad; the gauge at Westbrook, Teignmouth, being, however, perfectly correct, efficiently represents that locality. At Dawlish, the gauge showed slightly too small a fall; it has since been adjusted, and is now, I believe, correct. At Exeter, High Street, the gauge (10 inch circular) is placed on the roof; it was very inaccurate, but has been corrected, and a new 5 inch one placed beside it. The returns both from it and the Institution have been allowed to stand, as from some incomprehensible cause, the totals appear nearly correct, and they are both very old gauges, especially the latter, which has been continuously observed since 1817. St. Thomas's Hospital dates still further back, but being extremely incorrect, and moreover not now observed as carefully as it was, and as gauges ought to be, it is disfranchised (to quote the term which *Chambers's Journal* applied to my condemnation). Exeter Institution gauge was on a wall in the best position the premises afforded, but a holly bush, planted doubtless long after the gauge, had overtopped it by 6 feet, and was scarcely 3 feet from it. I, of course, protested against such a state of things, and had the pleasure of finding the offending bush beheaded the next morning. At Dover, the lower gauge had been made by a local workman, was extremely bad, and its position not good; as, however, no better offered, it has been corrected, and is now at work. The Dover returns for 1863 are suppressed, and 1862 should be struck out of my previous pamphlet. The gauge on the Keep is 99 feet above the ground; in fact, close to the flag-staff, where it was placed by permission of the officer commanding the garrison, and is protected by the bombardiers on duty; the result is given simply as an illustration of the effect of a very exposed position. In most other instances, both the accuracy of the gauges and the suitability of their position was very satisfactory; but I would earnestly caution observers against allowing either trees or shrubs to hinder the rain falling fairly into the gauge. Everyone knows how nearly horizontal it often falls, and bearing that in mind,

observers will agree with me that wherever possible a gauge should be exposed to a clear zenith distance of 60° *all* round.

GEOGRAPHICAL DISTRIBUTION OF STATIONS.

Another important matter is, the establishment and maintenance of gauges at tolerably equable distances from each other throughout the country—which may, perhaps, be best described as good geographical distribution. In order to improve in this respect, I applied to the British Association, at the Newcastle meeting for a grant, the disposal of which will be best explained by the following letters:—

TO THE EDITOR OF THE TIMES.

SIR,—I have on several occasions been indebted to your courtesy for the rapid circulation of particulars of rainfall; may I anticipate your assistance in obtaining a few recruits in rather out-of-the-way districts, some of which can hardly be reached save by *The Times*?

Those of your readers who take an interest in the subject are mostly aware that the collection of statistics of rainfall which I commenced a few years since, has extended so much, that there are now nearly 700 stations contributing their observations to a common centre, and receiving in return copies of those made at all the others. They will, therefore, probably be at first surprised to find that the object of this letter is to obtain *more* stations, and will require some information before they see the necessity that exists for their establishment. The fact is, that although there are now probably as many stations at work as are necessary for most purposes, they are not uniformly distributed throughout the United Kingdom; and, as it is impossible to expect a gentleman to change his residence because his observations would be more valuable elsewhere, it is obvious that the only plan is to start fresh gauges in the districts where observations are required.

This proposal has been endorsed by the British Association, and funds have been placed at my disposal, "for the purpose of constructing and transmitting rain gauges to districts where observations are not at present made."

My first request is, that any persons who regularly observe the fall of rain, and have not yet communicated with me, will do so at once, as otherwise I might be starting gauges unnecessarily close to them. My second request is, that persons residing in or near any of the undermentioned towns or districts, having an available open space, and willing to take charge of a very simple gauge, will notify their consent to me. It will save much correspondence if they also state whether they will purchase a gauge (both Negretti and Zambra, and Casella, now make them accurately, as low as 10s. 6d. each), or prefer my sending one of the British Association gauges.

The list looks rather extensive, and is so, but the blank places exist, and it is surely better to acknowledge than ignore them. It is a good time for commencing, as a little practice may now be had before the new year begins. There is no subscription, nor anything of the kind; for the observers either receive the publications gratis, or at the cost of printing, paper, and postage; neither is there any difficulty in observing, for my correspondents are of both sexes, all ages, and all classes.

I am, Sir, your obedient servant,

G. J. SYMONS.

129, Camden Road Villas, N.W., Nov. 24th.

Towns and Districts from the Vicinity of which Returns of the Fall of Rain are desired:—

ENGLAND.—Appleby, *Westmoreland.* Bellingham, Morpeth, *Northumberland.* Whitby, Northallerton, Goole, *Yorkshire.* Spilsby, *Lincoln.* Uppingham, *Rutland.* Downham Market, Swaffham, *Cambridge.* Tamworth. Hereford. Whitchurch, *Salop.* Shaftesbury, *Dorset.* Moreton-Hampstead, Hartland, *Devon.*

WALES.—Between Brecknock and Rhayader, Merthyr-Tydvil, Carmarthen, Aberystwith, Montgomery, Dolgelly, Bala, near Snowdon.

SCOTLAND.—Along the Border-line. Woodhead, *Ayrshire.* In the Carse of Gowrie. Huntly, *Aberdeen.* In the inland parts of Caithness, Ross, and Inverness.

IRELAND.—Mayo, Roscommon, Longford, Leitrim, Cavan, Louth, Antrim, Donegal, Wexford, Tipperary, South Limerick, and East Kerry, especially near the Lakes.

TO THE EDITOR OF THE TIMES.

Sir,—Many of your readers may feel interested in the result of your inserting my plea for additional observers of the fall of rain in districts whence previously returns had not been received.

As letters are still pouring in daily, and the arrangements far from complete, the following list comprises but a portion of the service rendered. I thought I knew pretty well what assistance I should receive, but am happy to say that both in quality and quantity my estimate has been surpassed. The applications for "Association" gauges from districts to which I should like to have sent them, have been so much more numerous than was expected, that a most reluctant refusal has been frequently necessitated, and individual replies to all the offers of assistance rendered all but impossible. The former (financial) difficulty has been much lessened, by the large proportion of my correspondents, who, on learning how matters stood, have defrayed the cost of their own instrument, as well as undertaken the necessary duties.

The extent to which this extra kindness has prevailed, will not be the least pleasant feature in the account of my stewardship, which I shall have to render at the Bath meeting of the British Association.

It may be well to correct an erroneous impression which seems rather prevalent—viz., that I do not care for observations save from the districts I named; that is not the case. I do not for a moment undertake to use anybody's observations—good, bad, or indifferent; but in an amateur system, removal and death are constantly thinning the ranks, and hence it becomes necessary to have a reserve corps ready to fill the vacancies; besides which, they act as checks on one another.

I cannot conclude without a special word of thanks for the sister isle, whence a most unexpectedly warm response has been received—unexpected, because Ireland had been far behind both England and Scotland, having in 1862 only 24 contributors, against 404 and 160 respectively. Now, however, though still least in number, they are so well distributed over the country as to afford safe *data* for the discussion of its rainfall, save that Killarney has not yet sent in a representative.

With many thanks for your assistance, to which science owes so much,

I am, Sir, your obedient servant,

G. J. SYMONS.

129, Camden Road Villas, N.W., Dec. 16th.

Additional Localities whence Returns of the Fall of Rain will in future be received.

IRELAND.—*Londonderry*—Moneydig, Garvagh. *Antrim*—Antrim. *Down* — Waringstown. *Louth*—Dundalk. *Cavan*—Owendoon, Bawnboy; Red Hill, Belturbet; Cavan. *Sligo*—Doo Castle, Bunninadden; Hazlewood; Sligo. *Mayo*—Castlebar. *Roscommon*—Holywell. *Longford*—Edgeworthstown. *Westmeath*—Athlone. *Dublin*—Clonsilla; Dublin. *Galway*—Innishambo, Lough Corrib; Galway. *Clare*—Ennis. *Tipperary*—Ballytristreen; Ballywalter-house, Cashel; Roscrea. *Limerick*—Blackwater.

SCOTLAND.—*Roxburgh*—Falnash; Borthwickbrae; Goldielands, Hawick; Lynnwood; Kirkton; Langraw; Menslaws; Sunlawshill; Sunnyside, Jedburgh; Cherryside, Kelso. *Renfrew*—Lochwinnoch. *Ayr*—Mauchline. *Dumbarton*—Stuckgown, Arrochar.

MONMOUTH AND WALES.—*Monmouth*—Abercarn; Abergavenny; Rockfield,. *Glamorgan*—Merthyr Tydvil. *Carmarthen*—Carmarthen. *Cardigan*—Goginan, Aberystwith; Trongoch, Aberystwith. *Montgomery*—Talgarthhall, Machynthleth; Berriew. *Carnarvon*—Llanfairfechan Pwllheli.

ENGLAND.—*Middlesex*—Highgate. *Surrey*—Croydon; Bagshot. *Kent*—Sandgate; West Wickham. *Hants*—Ryde. *Berks*—Wallingford. *Bedford*—Polton. *Oxford*—Henley-on-Thames. *Cambridge*—Abington Pigotts; Bexwell, Downham. *Essex*—Rochford. *Dorset*—Fontmell Magna, Shaftesbury; Gillingham; Sherborne. *Devon.*—Great Torrington; Hartland; Hele, Cullompton; Torquay; Sidmouth; Otterhead, Honiton. *Gloucester*—Charlton Kings. *Hereford*—Hereford; Broomy Hill, Hereford. *Salop*—Evelith, Shiffnal; Whitchurch. *Worcester*—Malvern. *Leicester*—Woodhouse, Loughborough. *Lincoln*—Welton House, Spilsby; Horncastle. *Lancashire*—Ulverstone. *York*—Tranby Park, Hessle; Doncaster; Saddleworth; Whitby; Helmesley-in-Ryedale; Northallerton; Upleatham, Redcar. *Northumberland*—Deadwater; Millfield, Wooler; Morpeth; Whitby, North Shields. *Cumberland*—Scaleby, Carlisle. *Westmoreland*—Appleby.

It will be seen that the second letter is dated December 16th, since which time many more stations have undertaken to co-operate with us.

EXPERIMENTAL RAIN GAUGES.

A mere glance down the columns in the general tables headed "Height of Rain Gauge above Ground," shews the utter absence of

uniformity which prevails, and which might well be expected, among a body of gentlemen (recently associated for a common cause, but) each having placed his gauge and commenced his observations without possessing, or being able to obtain, any definite information as to the height at which its rim should stand above the ground. To myself and to some others was equally well known the great variety in the diameter of the funnels, where circular, and in the area of square gauges—both round and square receivers being in use, varying in area from two inches to upwards of a foot. It must have struck any one conversant with these facts, that the indications of all rain gauges of whatever size or form, and at different heights above the ground, could hardly be expected to be accordant; and that, at all events, it was imperatively necessary that the effect, if any, of such differences should be ascertained. Experiments on the decrease due to elevation above the ground have been made from time to time since 1766, when Dr. Heberden first proved it by placing a gauge on the roof of Westminster Abbey, and an analysis of all such observations is in contemplation, but it was felt that, for reasons previously mentioned, it was desirable to make a set of observations with the best instruments, and entirely away from buildings. I am not aware of any good series of experiments with gauges of different sizes and forms. Under these circumstances, all who take any interest in the subject will be glad to hear that *two* such series are now at work, having been established during the last six months. The first and most important set have been erected in the grounds of Major Ward, at Castle House, Calne, who has not only undertaken the heavy expenses connected with their construction and erection, but also, which is no trifle, to read the whole series of more than twenty gauges daily. They may be best classed as "Elevation Series" and "Magnitude Series," the former consisting of ten gauges; nine of them are 8 inches in diameter, and one 5 inches; one 8 inch being placed with its rim level with the ground, one 2 inches above it, others at 1ft., 2ft., 3ft., 5ft., 10ft., and 20ft., at which height the 5 inch is fixed for comparison with the 8 inch at the same height. Repeated and most careful experiments having (to my surprise) demonstrated that 3000 grains of water poured through 32ft. of vertical gas tubing loses less than 50 grains by adhesion to its sides—which amount is, besides, only lost on the first measurement after long-continued dry weather—it became evident that by far the most accurate as well as most convenient mode of measuring the fall in the higher of these gauges was to employ a sufficient length of pipe to deliver the water at about 5 feet above the ground. These gauges, it may be added, are mounted on stout poles, so as to be perfectly independent of any buildings or other erections, are sufficiently distant from trees, and far from the house. The Magnitude Series consists of gauges, 1in., 2in., 4in., 5in., 5in. with a broad insloping flange, 6in., 8in., 12in., and 24in. diameter; also, two square

ones, 25in. and 100in. in area; these gauges are all one foot above the ground.

These experiments having only been continued about six months, it would be premature to offer any of the results which have yet been obtained.*

The other set of observations are being made by the Rev. J. Chadwick Bates, of St. Martin's, Castleton Moor, Manchester, and are intended solely as a check on the general applicability of the results obtained at Calne. Not having had time to superintend their erection myself, nor as yet to examine them subsequently, I am solely indebted to Mr. Bates for the particulars of their heights, magnitudes, &c., which are as follows:— A 5in. and an 8in. at 20ft., at 5ft., and at 1ft., at which height a 3in. gauge is also placed. I believe the arrangements to be almost identical at Calne and at Castleton; both observers possess self-recording anemometers, which will render the detection of the influence of wind on the gauges very easy; their interest in the experiments is sufficiently evidenced by their undertaking the cost and the trouble, while their position and the fact that, I believe, neither they nor I have any preconceived theories or fancies to support, insures the fairest possible examination of all branches of the subject.

RAINY DAYS.

We are unhappily no nearer a satisfactory definition of rainy days than we were last year. I asked the observers to favour me with the number of "rainy days," and their own definition of the term, along with the depth of rain; and where they have possessed any materials for the purpose, they have done so. The result is, however, amply demonstrative that the observations of hardly any persons are comparable, even (and this is the most provoking part of the matter) when they adopt the same definition. I suggested in last year's pamphlet that "the *best* plan would undoubtedly be, to record, however approximately, the number of *hours* on which rain fell; but, failing this, that it would probably accord best with the usage of the majority of observers to consider a 'rainy day' each day on which a measurable amount of rain fell. No measurement of less than 0·01 in. to be taken account of."

There is one objection to this proposal, not affecting the rule, but the term. I am told that "rainy days" should be "days on which rain fell," as otherwise we brand as a rainy day one on which but a passing shower fell. There is force in the objection; but it may be doubted whether, as the *rule* must be borne in mind, the absolute accuracy of the words used to indicate it is of as much importance as the brevity of "rainy days."

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* A series of beautiful stereographs of these gauges have been taken, by permission of Major Ward, copies of which may be purchased of the photographers, J. and J. Dutton, 44, Milsom Street, Bath.

But the whole question is in a most unsatisfactory state, and I see not yet what to suggest, except to note on how many days the fall amounts to or exceeds 0·01 in.

I have previously mentioned that even when the same definition is accepted, observers closely adjacent differ widely in their numbers; but where the definition is based on measurement, this is of course materially lessened; so that I think the following table may be tolerably reliable—at any rate, more so than any yet published. Still the contrast between the discordances in this table, and the close agreement now established in the tables of depth, seems to show that more care should be given to the record of small quantities of rain, instead of allowing them to merge in the next large measurement. If less than 0·01 in. fall, it should be left in the gauge, but not otherwise.

Number of Days on which the fall of Rain amounted to 0·01 *in. or more, in* 1863.

ENGLAND AND WALES.

I. Camden Town	131	V. Rosecarrock	229
I. Hampstead	139	VI. Goldthorn Hill	160
I. Tottenham	139	VI. Lark Hill, Worcester	157
II. Betchworth	134	VI. Rugby	144
II. Bournemouth	111	VII. Rothley	140
III. Field's Weir, Hoddesdon	138	VIII. Caton	202
III. Berkhampstead	160	VIII. Allithwaite	215
III. Banbury	158	IX. Broomhall Park	187
III. Tetworth	139	IX. Wath-upon-Dearne	139
III. Wisbech	150	IX. Tranby, near Hessle	172
IV. Grundisburgh	154	IX. Beverley Road, Hull	152
IV. Culford	111	X. West Hendon	165
IV. Diss	135	X. Sunderland	147
IV. Burnham	155	X. Whinfell Hall	247
V. Little Bridy	154	X. Silloth	191
V. Netherbury	170	X. Appleby	210
V. Broadhembury	193	XI. Pembroke Dock	199
V. Bodmin	229	XI. Guernsey	155

SCOTLAND.

XIII. Inveresk	149	XVI. Kettins	146
XIV. Bothwell Castle	217	XVII. New Pitsligo	204
XV. Otter House	232	XIX. Kirkwall	109

IRELAND.

XX. Valentia	224	XXI. Black Rock, Dublin	129
XX. Killaloe	257	XXI. Monkstown	198
XXI. Kilkenny	183	XXIII. Waringstown	194

In illustration of the difficulty of deciding the question, I quote a few of the answers to my request for a definition of a "rainy day;" and to avoid the chance of giving offence take them in no kind of order:—

"I consider it a rainy day when we have rain to prevent out-door work for six or eight hours."

"Every day when sufficient rain fell to wet the stones."

"Not what will only wet the stones, but give 0·01 in. in the gauge."

"Every day when it rains more than one hour."

"A rainy day when I can measure rain. A 'wet day' when it rains the greater part of the day."

"A rainy day should have at least six hours rain."

"Rainy day that on which *any* water is collected in the gauge; but it would be more properly called 'wet measuring day,' or 'measuring day,' or 'wet day.' The popular idea of 'rainy day' involves time, and only marks the rain by daylight. All observers of course would know what you mean by rainy day."

"What we consider a rainy day in —— is, if the gauge measures 0·01 in., or anything exceeding that quantity. What else can a 'rainy day' mean?"

"I consider it a 'rainy day' when rain is falling during the greater part of the day."

"By 'rainy days' I mean any days on which the fall exceeds the *average* obtained by dividing the annual fall by the number of days in which *any* rain has fallen; that average is here 0·167 in. by a mean of 20 years."

MONTHLY RAIN CIRCULAR.

This has shared in the expansion of other branches of the inquiry, and will during 1864 contain reports from forty selected stations, in lieu of twenty, as in those for 1863, which are reprinted at the end of the general tables. The price has been necessarily raised to 5/ per annum for the circulars sent post free monthly, and also the annual tables at the end of the year. It is believed that its circulation will soon suffice to defray the entire printing and publishing expenses of the undertaking.

COLLECTION OF OLD RECORDS OF RAINFALL.

The pressure on my time has been too great recently for me to ascertain exactly what progress has been made in this matter. But I hope shortly to do so, and also largely to increase my collection by asking *all* the observers (and non-observers, if they can,) to contribute copies of their observations prior to 1860, for the convenient entry of which I shall be most happy to supply suitable forms. Many have done so, but *all* should. It may not be amiss to add, that even an odd year or two is often very useful; for instance, the original observations at The Flosh, Cleator, for 1854, are lost; a copy of that one year would complete the series, which extends to 1845.

MISCELLANEOUS AND PROSPECTIVE.

We are again indebted to the Board of Northern Lighthouses, not only for having favoured us with returns for 1863, but also for having

had the heights of all their gauges above the ground measured, so as to render the returns still more serviceable for our purposes.

The arrangement of the tables remains unaltered with two exceptions, necessitated by the increased number of stations—namely, the subdivision of Sussex into West and East, and of Ireland into the four provinces, which is rather a prospective arrangement, indispensable next year, when the new stations will nearly double the number of Irish returns.

It may not be inappropriate here to repeat that in the general tables the ? is the sign of uncertainty only, *not* inaccuracy, and that no return is quoted unless the register is absolutely continuous throughout the year.

For the future I look for improvement in our means of measuring the evaporation of the earth's surface, as a subject of the highest import—affecting many matters besides the primary questions of drainage and water-supply, and as adding one more to the branches herein previously touched upon—each and all of which will combine to occupy me during 1864; and which probably neither it nor many succeeding years will suffice finally to complete. I look to a much more extensive visitation of rain-gauges during the present year—as not merely ensuring the accuracy of the instruments and their position, but also more lively interest (if possible) on the part of the observers, with hearty thanks to whom, I most appropriately close this report.

G. J. S.

ON THE FALL OF RAIN DURING 1863.

It requires but a cursory glance at the average tables (pp. 16, 17,) to see that the distribution of rain has been very similar in 1863, to that in 1861. In both years the fall was deficient in the Midland and Eastern counties of England, and in excess in almost all other parts of the British Isles. That this sort of counterpoise should prevail for four successive years, is a result for which I was not prepared, and I anxiously await the completion of the collection of old observations, which alone can enable me to ascertain whether such is ordinarily the case.

The observers' remarks render detailed comment unnecessary, but it may be well to point out, that at several stations in the central parts of England, the *deficiency* in the three years 1861-2-3, amounts to very nearly one year's average fall, and that at stations in Lancashire, the English Lakes, West Scotland, and Ireland, the fall during the same years has nearly amounted to one year's average in *excess*. It may not be uninteresting to select from the general tables a few of the extreme falls, from gauges believed truly to represent their respective localities; two of them have been tested on the spot—viz., Seathwaite and Greatford.

	inches.		inches.
X. Seathwaite	173·84	VII. Southwell	14·46
XV. Drishaig	172·55	VII. Greatford	16·36
XVIII. Portree	148·89	VII. South Kyme	16·47
XVIII. Glen Quoich	137·44	VII. Lincoln	16·64
XVIII. Oronsay	123·81	VII. Market Rasen	16·73
XV. Ben Lomond	117·00	III. Bedford	16·75
XV. Torosay	111·00	VII. Grantham	16·80
XVI. Glen Gyle	105·50		

Details of the monthly fall at 20 stations, with copious remarks, are given in the circulars at the end of the general tables, and a daily record is added for the reasons assigned, at its foot.

OBSERVERS' NOTES.

ENGLAND AND WALES.

II. *Lamberhurst.*—The year has been most favourable for agriculture.

II. *Maidstone.*—Rainfall above the average only in January, June, and September.

II. *Streatley.*—On September 9th a very devastating storm crossed in full fury over the upper end of this parish, tearing leaves and bark off trees, and threshing out all the standing corn. Partridges, as well as smaller birds, were found dead in numbers, and I have good evidence of a hare found dead in the middle of a road, killed, in all probability, by the hail. Twelve pigs were drowned in their stye, and hedge-banks washed down in a mass. In one lane I found the water to have stood 3 feet in depth.

IV. *Westley.*—On the night of August 29th, 0·76 in. fell in 15 minutes.

IV. *Burnham.*—Less rain than in any one of the last 24 years.

IV. *Holkham.*—Previous to 1863, the least rainfall in 15 years, was in 1858 (20·35 in.); 1863 is, however, less by 2·12 in.

V. *Exeter Institution.*—On June 18th, 1·10 in. fell in 12 hours.

V. *Clyst Hydon.*—A difference of an inch in one month was caused by a thunderstorm at Exeter, which did not reach here.

V. *Great Torrington.*—In December I had polyanthus and veronica in flower, where the sun did not reach. Wild strawberries were gathered the week before Christmas.

V. *St. Agnes.*—On June 12th the rainfall here was 2·36 in., but it must have been still heavier in the neighbouring valley, where the barrows used for carrying ores, which were dry and empty in the evening, were full in the morning. Allowing for their shelving sides, it would probably require 4 in. of rain to do this.

VI. *Lark Hill, Worcester.*—Rainfall 3.51 in. below the average of 10 years.

VII. *Wigston.*—Rainfall 4·75 in. below the average of 30 years.

VII. *Belvoir.*—The advantages of a dry warm season in a clay district are so many, that the inconvenience resulting from a temporary scarcity of water is overbalanced. Good and well-ripened crops of cereals, excellent hay, well-matured roots, such as potatoes and turnips, have been secured this year with 19 inches of rain, and although the shortness of food in pastures was complained of, cattle and sheep were healthy and thriving all the season. Fruit was remarkably well ripened, and the quality of all kinds never exceeded in any season I have recorded. Wells are low, and canal reservoirs nearly empty.

VII. *Grantham.*—I never registered so little rain. 1854 was 17·98.

VII. *Highfield House.*—Rainfall 7·40 in. below the average of 20 years.

VII. *Welbeck.*—Rainfall 5 in. below the average of 25 years. The meteorological characteristics of 1863 have been extraordinary. The winter and spring months exceedingly mild and dry, but the rainfall of June saved the cereal crops, although not in time to prevent the hay being light. July, August, and September, had an average rainfall, but a high temperature, so that one of the finest and most abundant harvests ever seen was secured in excellent condition. The potatoes were very good and free from disease.

VII. *West Retford.*—In the four months, February to May, only 1·89 in. of rain fell.

VII. *Derby.*—In February the rainfall (0·49) was less than in any year since 1844, except 1858, when it was only 0·20 in.

VIII. *South Shore.*—October (6·10) wetter than any month since 1855.

VIII. *Caton.*—The heaviest rainfall for 15 years; every month but three above the average.

VIII. *Hest Bank.*—The depth of rain has not been exceeded since 1852; the last three years have all been above the average.

VIII. *Aynesome.*—September to December four most gloomy months; the weather mild and open, but the sun not seen on more than 20 days in the four months.

IX. *Boston Spa.*—Remarkably little thunder this year. Potatoes very plentiful and free from disease. December 24th, winter aconite in flower; it is very rare here.

IX. *Ingleborough.*—The most rainy year since 1852 (47·87 in.). December so mild that we had primroses, hepaticas, verbenas, mignonette, also dandelions, groundsel, and other wild flowers in bloom at Christmas.

X. *Appleby.*—Latter part of the year very mild; bees working as in summer on November 26th, and mignonette in flower in the open garden December 31st.

XI. *Rhydwen.*—July, usually a wet month, was remarkably dry but followed by almost incessant rain for three months, which rendered harvest operations very difficult; indeed, the results have been most disastrous.

SCOTLAND.

XIV. *Auchendrane.*—A third disastrous year for the farmers in this district. The seed-time in April was wet, and there was no sunshine till July, which was a splendid month. The stooks were however drenched with rain in September and October. No acorns on the oaks, no fruit in the orchards, and no seed on the firs.

XVI. *Leny.*—January and February characterised by comparatively high temperature, and no frost. Up to the end of June a splendid season; oak in leaf earlier than I ever remember, and the best rise in its bark for 40 years. The first fortnight and last ten days of July very warm. On the night of July 15th frost sufficiently strong to make ice and blacken the potatoe shaws in low levels. September a wretched harvest month. During December heard the thrush singing occasionally, and on the 26th gathered snowdrops, primroses, and rhododendron nigrum, in full bloom.

XVIII. *Ardross Castle.*—The weather very cold and wet till July, which was dry, with white frost on the 16th. The season altogether very backward.

XVIII. *Portree.*—January, February, September, November, and December, the stormiest months in the memory of man. July the finest for many years. Frost on the 16th, 20th, and 21st; on the latter date the temperature fell to 24°·8, and all the potatoes in low lying ground were thereby blackened.

XIX. *House of Tongue.*—September remarkable for low temperature and large rainfall; December for high temperature and violent gales.

IRELAND.

XXI. *Wexford.*—The rainfall in October has not been exceeded for 10 years.

XXII. *Markree.*—The rainfall has been rather below the average of the last 30 years, but above that of the years 1838-9-40, 1842, 1844, 1855-6, and 1858.

"FEBRUARY FILL DYKE."—(*Rev. W. H. Milner.*) Being a Westmoreland man, brought up among the hills, I think I can from my own observation explain the origin of "February Fill Dyke," consistently with the *dryness* of the month. The snow in that month being so dry and light, and so easily driven by the wind, seldom lays evenly on the ground, or falls quietly into a rain-gauge, but is piled up against fences or fills the ditches up to the brim, whilst on the plain fields there is scarcely a trace. On the contrary, when snow falls in a rainy month, it is generally soft, falls less lightly, and is more equally distributed.

SNOWFALL.—(*H. S. Eaton, Esq.*,) In the case of snow-drift it is customary to reject what is collected by the rain-gauge. By selecting a spot where the snow is of average depth, inverting the funnel of the gauge on the snow, and melting what is included, we get a much better value of the amount of fall than by any other means.

Errata or Corrections in the Tables for 1862.—Dover (II.) cancel observations. Dartmoor (V.) for 93·51 read 98·51. Beaufort Castle (XVIII.) for 30·70 read 30·07.

COMPARISON OF THE RAINFALL

IN THE

THREE YEARS 1861-2-3,

WITH THE

AVERAGE OF THE TEN YEARS 1850—9.

ENGLAND.

Division.	STATION.	COUNTY.	AVERAGE FALL.	1861.	1862.	1863.
			inches.	inches.	inches.	inches.
I.	Chiswell Street ...	Middlessex	21·67	+ 1·18	+ 4·07	— 2·58
I.	Enfield	,,	22·67	— 2·65	+ 3·74	+ 2·16
II.	Chichester	Sussex.....	26·67	— 1·52	+ 0·80	— 1·59
II.	Ventnor	Hants	28·46	— 1·17	+ 1·47	— 0·90
III.	Hitchin	Herts	24·72	— 4·80	— 2·20	— 5·37
III.	Banbury	Oxford.....	24·73	— 2·64	+ 1·54	— 3·77
III.	Althorp	Northampton ...	20·34	— 0·94	+ 3·87	— 3.37
IV.	Epping	Essex	23.18	— 2·76	+ 2·68	— 3·93
IV.	Witham	,,	20·55	— 1·72	+ 1·23	— 3·22
IV.	Burnham	Norfolk	26·86	— 2·08	— 0·15	— 3·90
IV.	Holkham	,,	26·13	— 4·33	— 3·41	— 7·90
V.	Baverstock	Wilts	28·69	— 1·94	+ 1·61	+ 1·76
V.	Goodamoor.....	Devon	54·12	— 0·46	+ 9·02	+ 4·68
V.	Clyst Hydon	,,	30·74	— 5·53	+ 0·19	+ 1·58
V.	Broadhembury ...	,,	32·75	— 4·23	+ 4·02	+ 2·53
V.	Helston	Cornwall	36·22	+ 1·40	+ 2·21	— 0·26
V.	Bodmin	,,	43·48	+ 1·08	+ 3·88	— 1·13
V.	Brislington.....	Somerset	27·74	+ 1·17	+ 8·20	+ 3·18
VI.	Cirencester	Gloucester	29·60	— 2·21	+ 2·86	— 1·65
VI.	Shiffnal	Shropshire	24·02	— 0·22	+ 1·68	— 2·81
VI.	Orleton	Worcester	28·82	+ 0·99	+ 5·49	— 1·15
VII.	Wigston	Leicester.....	26·39	— 3·19	— 0·26	— 4·62
VII.	Derby	Derby	23·98	— 1·97	+ 2·30	— 0·38
VIII.	Bolton.....	Lancashire	44·01	+ 0·90	+ 9·42	+ 9·74
VIII.	Rufford	,,	33·24	+ 1·55	+ 4·46	+ 6·50
VIII.	Preston (Howick)	,,	34·28	+ 2·31	+10·05	+ 7·59
VIII.	Stonyhurst	,,	45·37	+ 3·63	+ 9.03	+12·69
VIII.	Coniston.....	,,	71·40	+30·80	+25·00	+12·50
IX.	Redmires	York, W. Riding	37·86	+ 0·08	+ 2·20	+ 2·84
IX.	Standedge	,,	49·58	+ 0·17	+ 3·67	+10·92
IX.	Well Head,Halifax	,,	30·71	+ 0·08	+ 1·51	+ 6·87
IX.	Leeds(Marshall&Co.)	,,	20·91	+ 2·39	+ 0·34	+ 0·54
IX.	Settle	,,	35·55	+ 6·24	+ 7·22	+ 8·73
IX.	Patrington	York, E. Riding	20·65	— 2·03	— 1·93	— 1·81
IX.	York	,,	22·02	— 1·75	+ 1·09	+ 0·21
X.	Bishopwearmouth.	Durham	16·91	+ 2·39	+ 4·06	+ 4·80
X.	Seathwaite	Cumberland ...	126·98	+55·60	+43·05	+46·86
X.	Keswick	,,	55·01	+19·41	+ 6·36	+16·53

SCOTLAND.

Division.	STATION.	COUNTY.	AVERAGE FALL.	1861.	1862.	1863.
			inches.	inches.	inches.	inches.
XIII.	Thurston, Dunbar	Haddington.....	26·96	— 1·16	+ 3·44	— 1·16
XIII.	Glencorse	Edinburgh	36·96	+ 1·14	+ 6·14	+ 2·34
XIII.	Inveresk	"	24·72	+ 3·79	+ 8·17	+ 4·38
XIV.	Bothwell Castle ...	Lanark	27·76	— 2·32	+11·20	+ 2·56
XIV.	Mansfield Largs...	Ayr	43·06	+12·74	+11·64	+11·04
XIV.	Brisbane	"	46·86	+15·14	+12·84	+ 8·74
XV.	Castle Toward.....	Argyll	47·88	+17·46	+14·39	+ 9·38
XV.	Torosay, Mull.....	"	74·64	+21·36	+19·36	+36·36
XVI.	Pittenweem	Fife	24·38	+ 4·07	+ 1·59	— 1·98
XVI.	Deanston.....	Perth	39·21	+ 5·84	+12·34	+ 5·34
XVI.	Stanley	"	29·05	+ 5·53	+ 5·02	— 1·30
XVI.	Craigton	Forfar	31·87	+ 3·06	+ 6·37	— 3·02
XVI.	Hill Head	"	31·06	+ 4·49	+ 6·27	— 2·66
XVII.	Castle Newe.....	Aberdeen.....	32·99	+ 6·07	— 3·58	— 4·20
XIX.	Sandwick.....	Orkney	36·14	+ 5·04	— 1·76	+ 3·58
XIX.	Bressay	Shetland	36·22	+ 4·93	+ 9·73	+ 7·18

IRELAND.

XX.	Portlaw	Waterford	39·49	+ 9·82	+10·61	+ 2·25
XX.	Killaloe	Clare	38·35	+13·49	+ 9·02	+12·18
XXI.	Black Rock.....	Dublin.....	21·78	+ 2·89	+ 3·20	+ 1·29
XXII.	Markree Castle ...	Sligo	36·35	+10·81	+ 3·56	— 1·64

ABSTRACT.

England*	30·52	— 0·09	+ 3·12	+ 1·49
Scotland	36·86	+ 6·70	+ 7·70	+ 4·79
Ireland	33·99	+ 9·25	+ 6·60	+ 3·52
United Kingdom	33·79	+ 5·29	+ 5·81	+ 3·27

* Seathwaite and Coniston are not included in these calculations; if they were, the figures would be 34·13, +2·19, +4·75, +2·97.

HEAVIEST FALL OF RAIN IN 24 HOURS.

(*For other instances see pages* 36 *to* 47.)

Division.	Stations.	Date.	Depth.	Division.	Stations.	Date.	Depth.
			inches.				inches.
I.	Bryanstone Sq.	June 19.	1·39	VII.	Derby	June 10.	2·02
II.	Bagshot	Aug. 27.	0·96	VIII.	Standish	June 10.	2·08
II.	Sevenoaks	June 19.	1·32	VIII.	Greenbank	Aug. 26.	2·10
V.	Battle	Sept. 20.	1·15	IX.	Rastrick	June 10.	1·62
V.	Tavistock.....	July 21.	1·44	IX.	"	" 11.	2·38
VI.	St. Agnes	June 12.	2·36	IX.	Leeds	June 10.	1·25
VI.	Cheltenham.....	June 10.	2·15	XI.	Llandyfrydog ...	Oct. 20.	1·37
VII.	Shrewsbury	June 10.	2·00	XV.	Drishaig	Dec. 4.	7·20
VII.	Doveridge	July 12.	1·45	XXI.	Wexford	Oct. 4.	1·83

ENGLAND AND WALES.

†DIVISION I.—MIDDLESEX.

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground. ft.	in.	Above Sea Level. feet.	Depth of Rain. 1863 Inches.
MIDDLESEX—Staines	W. Menzies, Esq.	6	0	...	18·04
Hammersmith	F. J. Burge, Esq.	1	0	12?	21.23
Spring Gardens, Westminster	J. W. Bazalgette, Esq.	6	8	37	18·45
" " "	" " "	64	9	95	18·47
" " "	" " "	65	3	95	17·32
Guildhall	W. Haywood, Esq.	4	0	50	20·10
Bryanstone Square	C. O. F. Cator, Esq.	4	6	93	21·07
Chiswell Street	W. Fletcher, Esq.	50	0	...	19·09
Mile End	F. Charrington, Esq.	4	0	...	19·95
*Camden Town	G. J. Symons, Esq.	0	4	100	21·49
Hackney	Dr. Tripe	0	6	40	21·94
Hampstead	R. Field, Esq.	1	0	360	22·97
Highgate Nurseries	J. Cutbush, Esq.	0	6	320?	22·75
Tottenham	W. D. Howard, Esq.	0	3	60	20·68
*Colney Hatch Asylum	Mr. R. G. Rose	40	0	...	22·47
Enfield	RevJ. M. Heath	25	0	110	24·83

DIVISION II.—SOUTH-EASTERN COUNTIES.

SURREY—Dunsfold, Godalming	W. L. Woods, Esq.	0	6	...	21·51
Kitlands, Dorking	D. D. Heath, Esq.	4	8	580	25·89
Red Hill	J. G. Marriage, Esq.	3	0	...	20·97
Dorking (Deepdene)	Mr. J. B. Whiting	2	9	...	25·20
Betchworth (Brockham)	W. Bennett, Esq.	0	6	130	22·19
" (The Holmes)	E. T. Bennett, Esq.	0	6	300	23·39
Caterham	Dr. Westall	5	0	370	25·57
*Cobham Lodge	Miss Molesworth	0	6	100	20·51
Weybridge Heath	W. F. Harrison, Esq.	0	6	120	21·54
Bagshot	Dr. Blount	3	0	200?	25·47
Wandsworth (South Fields)	R. Coleman, Esq.	1	0	...	21·10
" (St. Ann's Hill)	G. Dines, Esq.	5	0	57	21·50
Clapham	H. Doxat, Esq.	0	11	...	20·86
Kew Observatory	B. Stewart, Esq.	1	3	19	19·95
Battersea	Rev. S. Clark	0	0	13	19·61
*KENT—Dover, Castle Keep	H. J. Poulter, Esq.	99	0	512	13·61
Horton Park, Hythe	J. Kirkpatrick, Esq.	0	6?	280?	26·77
Lamberhurst	W. C. Morland, Esq.	3	0	200?	26·13
Tunbridge	Dr. Fielding	0	0	125	23·28
Linton Park, Staplehurst	Mr. J. Robson	0	6	200?	22·75
Hunton Court "	Mr. P. Goddard	0	6	...	21·31
Maidstone	J. H. Baverstock, Esq.	6	0	60	20·73
*River Hill, Seven Oaks	J. T. Rogers, Esq.	9	0	520	24·95

† The divisions are the same as those adopted by the Registrars-General of England and Scotland. The Stations in each county are arranged in the order of their latitude from South to North.

DIVISION II.—SOUTH-EASTERN COUNTIES—(*continued*).

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground.	Height of Rain Gauge. Above Sea Level	Depth of Rain. 1863
		ft. in.	feet.	inches.
*KENT (*continued*)—Chartwell ...	J. C. Colquhoun, Esq.	0 8	400	26·45
West Wickham	Rev. J. T. Austen	1 0	...	26·31
" "	W. Steuart, Esq.	3 0	...	20·29
Welling, Bexley Heath	H.S.H. Wollaston, Esq.	6 0	150	19·52
WEST SUSSEX—Aldwick, Bognor...	H. Upton, Esq.	0 6	8	21·70
Brighton	Dr. Kebbell	4 0	50 ?	28·10
West Thorney	F. Padwick, Esq.	0 10	10	24·24
Chichester (Museum)	W. Hills, Esq.	0 6	20	25·08
" (Westgate)	W. L. Woods, Esq. ...	...	...	25·22
" (Shopwyke)	Rev. G. H. Woods ...	1 3	61	23·75
" (Funtington)	G. M. Fort, Esq.	0 6	70 ?	27·50
Slindon	Rev. M. A. Smelt	1 0	185	31·16
Dale Park, Arundel	J. C. Fletcher, Esq. ...	4 0	316	30·95
West Dean	H. Paxton, Esq.	0 6	250	35·68
Chilgrove	W. L. Woods, Esq. ...	0 6	284	30·45
Hurstpierpoint.....	Rev. J. Gorham.....	0 6	110 ?	27·09
Fair Oak, Rogate	Hon. I. J. Carnegie ...	0 6	245	31·17
Petworth	Rev. C. Holland	0 4	...	26·51
Balcombe Place, Cuckfield.....	J. A. Hankey, Esq. ...	0 6 ?	340	28·40
E. SUSSEX—Hastings(High Wickham)	E. Field, Esq.	1 0	212	22·06
*Bleak House.....	Mr. J. Banks	4 0	80	18·83
*Fairlight	J. Rock, Jun., Esq. ...	0 6	500	22·09
Glynd, Lewes	C. L. Prince, Esq.....	...	...	30·01
Battle	F. Webster, Esq.	1 3	...	29·55
Uckfield	C. L. Prince, Esq.....	6 0	200	25·74
Beechland, Newick	" " "	...	...	26·30
Buxted Park	" " "	6 0	...	26·69
Maresfield (Rectory)	Rev. E. Turner	0 2	250	26·74
" (Forest Lodge).....	Captain W. Noble.....	1 2	301	25·71
Eridge Castle	C. L. Prince, Esq.....	...	...	28·42
HAMPSHIRE—Ventnor, I. of Wight	Dr. Martin.....	3 0	150	27·56
Ryde, Isle of Wight	Mr. R. Taylor.....	7 0	15	30·82
Osborne "	J. R. Mann, Esq.	0 8	172	28·84
Bournemouth	Dr. Falls.....	1 0	30 ?	30·10
Fareham	H. Sharland, Esq.....	0 0	26	31·25
"	R. Porter, Jun., Esq....	1 0	8	28·06
Lyndhurst	C. L. Prince, Esq.....	...	...	33·82
Southampton, Ordnance Survey Office.....	Col. Sir H. James, R.E.	0 0	74	31·50
	" " "	18 6	92	25·82
Eling House, Southampton	W. C. Spooner, Esq....	0 8	15	30·46
Petersfield	Dr. Peskett	...	...	35·79
Liss, Petersfield	G. E. Coryton, Esq. ...	0 6	...	36·66
Arle Bury, New Alresford.....	F. Marx, Esq.....	1 3	55 ?	26·90
The Wakes, Selborne	T. Bell, Esq.	4 0	500 ?	31·20
Aldershott	J. Arnold, Esq.	4 0	325	23.45
BERKS—Sandhurst College	Dr. Collins	5 0	246	22·29
Windsor	Hon. Maj.-Gen. Hood	1 0	...	23·82
Streatley	Rev. J. Slatter	0 4	100	?39·97
Long Wittenham.....	Rev. J. C. Clutterbuck	1 0	170	25·20

DIVISION III.—SOUTH MIDLAND COUNTIES.

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground.	Height of Rain Gauge. Above Sea Level	Depth of Rain. 1863
		ft. in.	feet.	inches.
HERTS—Hunton Bridge, Watford	R. Littleboy, Esq.....	5 6	200 ?	23·38
Watford House	R. Clutterbuck, Esq....	1 6	...	23·44
Eastbury, Watford	D. Carnegie, Esq.	0 4	380 ?	24·54
Field's Weir, Hoddesdon	N. Beardmore, Esq. ...	2 0	82	22·07
Bayfordbury.....	W. Baker, Esq.	0 4	250	21·07
Gorhambury.....	Mr. G. Bogue	2 9	...	24·09
Hemelhempstead	J. Dickinson & Co. ...	3 0	250	22·76
Berkhampstead	W. Squire, Esq.	1 6	370	26·75
Woodfield, Stevenage.....	J. Bailey Denton, Esq.	3 6	250	19·31
Hitchin.....	W. Lucas, Esq.	1 6	240	19·35
Royston	H. Wortham, Esq. ...	0 6	266	17·87
BUCKS—Hartwell Rectory.....	Rev. C. Lowndes	4 0	290	19·08
OXFORD—Radcliffe Observatory ...	Rev. R. Main.....	0 10	210	22·37
" "	" " "	24 0	234	18·25
Banbury (High Street)	T. Beesley, Esq.....	7 0	345	21·15
"	J. Jarvis, Esq.	4 9	340	20·96
"	W. Johnson, Esq.	4 0	...	19·59
NORTHAMPTON—Yardley-Hastings	Rev. R. W. Prichard	1 2	...	19·62
Northampton	Mr. G. Ellick.....	7 6	...	15·36
Althorp House.....	Mr. W. F. Jakeman ...	3 10	310	16·97
Wellingborough	M. Sharman, Esq.....	0 2	...	17·63
HUNTS—Tetworth Hall.....	H. M. Kaye, Esq.....	0 6	...	18·94
Waresley	Rev. W. M. H. Elwyn	1 0	150	19·12
BEDFORD—Aspley, Woburn	Rev. G. W. Mahon ...	0 8	460	21·82
Cardington	Mr. J. B. McLaren ...	3 6	100	18·00
" " "	" " "	36 0	136	15·82
Bedford	Dr. Barker.....	3 6	104	16·75
CAMBRIDGE—Abington Pigotts (Royston)	G. Pigott, Esq.	0 6	130	17·00
Fulbourne.....	Rev. J. H. Usill.....	0 0	...	18·24
Cambridge	J. Nutter, Esq.	4 0	30	18·12
Wisbech	Mr. A. Peckover	0 8	11	20·93
" Observatory	Mr. S. H. Miller	0 6	10	19·36
" " "	" " "	35 0	45	16·90
Mid-Level Sluice.....	R. Lunn, Esq.	4 0	16	22·13

DIVISION IV.—EASTERN COUNTIES.

ESSEX—Leyton	J. G. Barclay, Esq. ...	0 8	97	17·86
Epping	H. Doubleday, Esq. ...	6 0	360	19·25
Dorward's Hall, Witham	H. Dixon, Esq.	2 0	20	17·33
Dunmow	H. E. Cockayne, Esq...	0 0	200 ?	18·05
Bocking, Braintree.....	S. Tabor, Esq.	3 0	200	19·72
Ashdon, Linton	Rev. J. T. Walker.....	1 0	300	19·84
SUFFOLK—Grundisburgh	P. Harris, Esq.	4 1	...	18·36
*Bury St. Edmunds (Abbeygate St.)	E. Skepper, Esq.	45 0	...	18·73
* " " (Beech Hill)	H. Turner, Esq.....	0 9	...	22·73
* " " (Botanic Gardens)	E. Skepper, Esq.	1 0	...	21·73
* " " (Westley)	R. Burrell, Esq.	1 6	...	20·46
* " " (Thurston Lodge)	Rev. W. Steggall	3 0	...	20·07
* " " (Barton Hall) ...	Mr. W. Allan.....	1 0	...	19·93
* " " (Culford)	Mr. P. Grieve	1 2	...	20·39

DIVISION IV.—EASTERN COUNTIES—(*continued*).

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground.	Height of Rain Gauge. Above Sea Level	Depth of Rain. 1863
		ft. in.	feet.	inches.
NORFOLK—Diss	Dr. Stewart	0 6	110	17·20
Norwich	W. Brooke, Esq.	0 0	100	18·58
„ (Cossey)	H. Culley, Esq.	1 0	...	18·01
Burgh Castle, Yarmouth	C. Cory, Esq.	0 0	10 ?	?15·10
Egmere	R. Overman, Esq.	4 0	150	18·24
Burnham	H. E. Blyth, Esq.	4 6	102	22·96
Holkham	S. Shellabear, Esq.	0 0	39	18·23
„ „ „	„ „ „	4 0	43	18·09
Hunstanton	Mr. J. Rippingale	3 8	60	18·67
DIVISION V.—SOUTH-WESTERN COUNTIES.				
WILTS—Alderbury, Salisbury	G. Fort, Esq.	1 0	...	26·80
Baverstock	Archdeacon Hony	3 0	300	30·45
Woodford, Salisbury	H. Hinxman, Esq.	0 9	...	27·20
Longbridge Deverill, Warminster	Rev. W. Slatter	1 0	400 ?	37·97
Marlborough	W. C. Merriman, Esq.	4 0	500 ?	28·84
*Castle House, Calne	Major Ward	0 11	251	25·88
* „ „ „	„ „ „	32 0	281	24·50
Badminton, Chippenham	Mr. J. Trotter	0 10	...	30·68
DORSET—Portland	J. T. Leather, Esq.	2 0	52	28·12
Encombe, Wareham	O. W. Farrer, Esq.	0 6	150	41·20
Upwey	J. Miller, Esq.	1 0	70	31·93
Little Bridy	H. S. Eaton, Esq.	0 4	348	38·62
Bridport	A. Stephens, Esq.	0 11	85	33·90
Netherbury	Rev. C. B. Mount	0 0	120 ?	34·39
Forde Abbey	G. Miles, Esq.	0 8	...	38·22
*DEVON—Plymouth (Saltram Gardens)	Mr. J. Snow	0 3	96	43·68
* „ (Ham)	Rev. C. Trelawny	3 0	94	37·85
*Ridgeway, Plympton St. Mary	Miss B. T. Phillipps	0 6	116	47·64
*Torrhill, Ivybridge	J. Widdicombe, Esq.	0 4	240	44·26
*Goodamoor, Plympton	H. H. Treby, Esq.	0 2	580	58·80
*Lee Moor	„ „ „	0 1	900 ?	63·55
*Highwick	Dr. Barham	1 6	350 ?	37·29
*Dartmoor (Prison Reservoir)	Hon. Capt. Best	0 2	1400	82·14
* „ (N. Hessary Tor.)	„ „ „	0 3	1596	84·38
*Westbrook, Teignmouth	Miss K. T. Clark	0 3	50	35·37
*Tavistock	Mr. W. Merrifield	20 0	273	41·03
*Edgecumbe, Milton Abbot	H. Clark, Esq.	0 6	...	41·96
*Endsleigh, Milton Abbot	Mr. Cornelius	0 6	...	41·20
*Dawlish	P. J. Margary, Esq.	0 8	62	32·24
*Bovey Tracey	J. Divett, Esq.	0 6	96	41·84
*Bystoke, Exmouth	E. Divett, Esq., M.P.	30 0	340	32·45
Hexworthy, Lidford	H. S. Eaton, Esq.	...	...	78·36
Chagford	R. L. Berry, Esq.	0 5	660	50·40
*Exeter (Albert Terrace)	R. Dymond, Esq.	0 0	141	32·28
* „ (St. Leonard's)	W. Vicary, Esq.	0 3	140	32·15
* „ „ „	„ „ „	20 0	160	27·54
* „ (High Street)	W. H. Ellis, Esq.	44 3	180	29·59
* „ (Devon & Exeter Institution)	Mr. E. Parfitt	13 7	155	31·44

DIVISION V.—SOUTH-WESTERN COUNTIES—(*continued.*)

STATIONS.	AUTHORITIES.	Height of Rain Gauge.		Depth of Rain.
		Above Ground.	Above Sea Level	1863
		ft. in.	feet.	inches.
DEVON (*contd.*)—Clysthydon, Cullompton	Rev. J. Huyshe.....	0 6	200?	32·32
Bradninch, Cullompton	Mr. H. Matthews	1 6	130	36·10
*Broadhembury, Honiton.....	Rev. W. Heberden ...	2 4	600	35·28
Otterhead "	Miss Beadon	0 10	...	44·47
Hayne, Tiverton	W. H. Gamlen, Esq....	0 3	400	38·94
Cove "	W. N. Row, Esq.	0 10	450	37·58
Great Torrington.....	Rev. S. Buckland	3 10	450?	37·54
Meshaw Rectory, S. Molton	Rev. W. H. Karslake	0 6	472	41·41
Castle Hill, S. Molton	Mr. A. Saul	3 0	150	48·32
Barnstaple	T. Mackrell, Esq.	0 6	31	40·17
CORNWALL—Helstone	M. P. Moyle, Esq.....	5 0	115	35·96
Penzance	W. H. Richards, Esq.	3 0	94	38·00
Tehidy Park, Redruth	Mr. H. Beddard	0 0	100	36·88
Truro (Royal Institution)	Dr. Barham	40 0	56	40·28
" (Penarth)	Nicholas Whitley, Esq.	1 0	190	40·84
St. Agnes	Dr. Barham	1 4	300	41·87
Newquay	Mr. W. H. Tregidgo...	3 0	90	37·40
Tideford, St. Germain's	Rev. T. Hullah	0 4	75?	37·99
Bodmin	Lieut. J. Liddell, R.N.	2 0	325	42·35
Warleggan, Bodmin	Rev. D. Clements	3 0	800	53·92
Pencarrow "	Mr. H. Jones.....	3 0	230	40·90
Treharrock House, Wadebridge	F. B. Hambly, Esq....	3 6	303	40·42
Rosecarrock, Port Isaac	Mark Guy, Esq.	3 0	210	40·14
Lanteglos, Camelford	Rev. J. I. Wilkinson...	3 0	450?	47·98
Camelford.....	Miss Pearse	3 6	580	50·58
SOMERSET—Ilchester	J. W. Bourne, Esq. ...	2 0	20?	29·79
Taunton	Dr. Gillett	1 6	38	28·54
Long Sutton, Langport	R. Palmer, Esq.....	0 7	...	30·42
Street, Glastonbury	J. Clark, Jun., Esq. ...	1 6	100	32·18
Downside College, Radstock.....	Rev. T. B. Snow	1 0?	601	43·62
Sidcot	H. Dymond, Esq.	5 0	250	34·39
Sherborne Reservoir, E. Harptree	Bristol Water Works	5 0	360	36·97
Bath	C. S. Barter, Esq.....	17 0	56	37·95
Batheaston, Bath	A. Mitchell, Esq.	2 0	226	25·46
Swanswick "	Rev. F. Lockey	32 0?	...	23·56
Brislington (Bristol)	Dr. C. J. Fox.....	2 0	181	30·92

DIVISION VI.—WEST MIDLAND COUNTIES.

GLOUCESTER—Bristol (Park Row)	Bristol Water Works	...	...	30·89
" " (Small St.)	" " "	25 0	40	28·69
Clifton	W. C. Burder, Esq. ...	0 6	192	32·26
" " "	" " "	50 0	242	27·21
Cirencester	T. C. Brown, Esq.....	1 2	446	27·95
Saul Lodge, Frampton-on-Severn	W. B. Clegram, Esq....	3 6	42	22·64
Quedgeley, Gloucester	J. C. Hayward, Esq....	0 10	50	23·74
Gloucester, (The Spa).....	A. Price, Esq.	3 6	50	20·06
Cheltenham (General Hospital)...	Mr. C. Moon	0 6	200	23·31
HEREFORD—Rocklands, Ross	J. M. Herbert, Esq. ...	1 10	100?	29·32
Leysters, Leominster	Rev. T. S. Hewitt.....	0 6	700?	25·45
West Lodge, Leominster	E. P. Southall, Esq. ...	1 6	229	22·15

DIVISION VI.—WEST MIDLAND COUNTIES—(*continued.*)

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground.	Height of Rain Gauge. Above Sea Level	Depth of Rain. 1863
		ft. in.	feet.	inches.
SALOP—Cleobury Mortimer	Mr. J. Bourn	0 9	600?	23·50
Knowbury, Ludlow	Rev. J. B. James	0 4	1000?	24·11
Evelith Manor, Shiffnal	Miss Elwell	4 8	450?	23·85
Haughton Hall „	Rev. J. Brooke	4 6	450?	21·21
Highfield, Shrewsbury	T. Howells, Esq.	5 6	200	25·44
Shrewsbury	Marshall & Co.	4 4	192	?22·70
Hengoed, Oswestry	Rev. A. R. Lloyd	6 0	471	30·32
STAFFORD—Wrottesley	Lord Wrottesley	0 0	531	23·86
„ „ „	„ „ „	22 0	553	20·09
Wolverhampton	H. Ward, Esq.	0 10	450?	23·20
„ „ Goldthorn Hill	W. H. Ford, Esq.	0 6	521	24·95
Stanley Reservoir, Stoke	J. Forbes, Esq.	10 0	550	32·47
Leek	Mr. R. Farrow	25 0	...	?47·61
Rudyard, Leek	J. Forbes, Esq.	10 0	500	36·85
Knypersley (near Congleton)	„ „ „	3 0	500	31·32
WORCESTER—Great Malvern	Dr. Williams	4 0	500	21·73
West Malvern	A. H. Hartland, Esq.	1 3	900	27·23
Worcester	J. Ball, Esq.	0 5	125	22·18
Lark Hill, Worcester	W. Burgess, Esq.	1 0	140	23·80
Orleton, Tenbury	T. H. Davis, Esq.	0 9	200	27·67
WARWICK—Leamington	S. U. Jones, Esq.	0 8	195	21.82
Rugby	F. Fuller, Esq.	2 4	315	18·51
Edgbaston	W. Southall, Esq.	1 6	510	24·75
Birmingham (Bloomsbury Street)	D. Smith, Esq.	0 10	340	24·56
„ (Mosely)	T. L. Plant, Esq.	4 0	481	24·73

DIVISION VII.—NORTH MIDLAND COUNTIES.

LEICESTER—Wigston	T. Burgess, Esq.	0 6	220	21·77
Fleckney, Market Harborough	Mr. J. B. Putt	0 8	...	21·66
Leicester	Mr. H. Billson	1 6	220?	22·34
Rothley, Loughborough	Rev. R. Burton	0 4	210	20·72
Loughborough	Rev. R. J. Bunch	0 9?	...	21·51
Waltham Rectory	Rev. G. E. Gillett	4 0	540?	19·39
*Belvoir Castle	W. Ingram, Esq.	0 8	237	18·87
*LINCOLN—Greatford Hall, Stamford	Captain Peacock	0 9	...	16·36
*Grantham	J. W. Jeans, Esq.	0 6	179	16·80
Boston	W. Veall, Esq.	4 0	20	18·29
South Kyme, Sleaford	Rev. H. S. Neucatre	0 0	9	16·47
Stubton (near Newark)	G. Nevile, Esq.	5 0	...	19·75
Lincoln	†M. S. & L. R. Co.	3 6	26	16·64
Gate Burton	„ „ „	3 6	96	18·63
Market Rasen	„ „ „	3 6	100	16·73
Gainsborough	„ „ „	3 6	76	18·52
„ (Spring Gardens)	T. Dyson, Esq.	8 0	38	18·55
Stockwith	M. S. & L. R. Co.	3 6	21	20·00
Brigg	„ „ „	3 6	16	24·06
Grimsby	„ „ „	15 0	42	21·48
Barnetby	„ „ „	3 6	51	20·97
New Holland	„ „ „	3 6	18	22·52

† Gauges kept for the Canals Department of the Manchester, Sheffield, and Lincolnshire Railway Company.

DIVISION VII.—NORTH MIDLAND COUNTIES.—*(continued.)*

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground. ft.	in.	Above Sea Level feet.	Depth of Rain. 1863 inches.
NOTTS—Highfield House	E. J. Lowe, Esq.	0	6	162	18·20
" " "	" " "	20	0	184	16·95
Beeston Meadow	Mr. W. Barker	1	1	100	19·13
Oxton, Southwell	H. Sherbrooke, Esq.	2	0	...	17·81
Southwell	W. W. P. Clay, Esq.	1	0	200	14·46
Welbeck Abbey	Mr. W. Tillery	4	0	...	19·55
Worksop	M. S. & L. R. Co.	3	6	127	20·42
Retford	" " "	3	6	52	18·94
" East	J. S. Piercy, Esq.	2	0	50	19·63
" West	Rev. C. D. Butterfield	0	6	50	19·18
DERBY—Doveridge	Hon. & Rev. O. Forester	7	0	270	26·94
Derby	J. Davis, Esq.	5	0	180	23·60
Chatsworth Gardens	Mr. A. Stewart	6	0	104	30·52
Chesterfield	M. S. & L. R. Co.	3	6	248	25·06
Norwood	" " "	3	6	238	22·00
Comb's Moss	" " "	3	6	1669	55·71
" Reservoir	" " "	3	6	710	57·59
Chapel-en-le-Frith	" " "	3	6	965	46·65
Woodhead	" " "	3	6	878	55·07

DIVISION VIII.—NORTH-WESTERN COUNTIES.

CHESHIRE—Bosley Minns	M. S. & L. R. Co.	3	6	1210	37·41
Bosley Reservoir	" " "	3	6	590	36·34
Macclesfield	" " "	3	6	539	37·11
" " "	W. Jeffery, Esq.	2	0	500	41·70
Kingsley, Frodsham	Rev. R. Tyas	0	8	193	37·09
Willaston	T. Waring, Esq.	4	0	...	30·40
Spond's Hill, Bollington	M. S. & L. R. Co.	3	6	1279	41·12
Whaley	" " "	3	6	602	45·27
Quarry Bank, Handforth	J. Henshall, Esq.	0	8	295	34·70
Thelwall (near Warrington)	J. Atkinson, Esq.	1	0	96	38·46
Marple Aqueduct	M. S. & L. R. Co.	3	6	321	39·25
" Top Lock	" " "	3	6	543	40·37
Kingston Mills, Hyde	H. H. Clayton, Esq.	0	6	350	34·87
Mottram Hill End	M. S. & L. R. Co.	3	6	680	43·57
" Matley's Field	" " "	3	6	399	40·15
Newton	" " "	3	6	396	35·23
LANCASHIRE — Observatory, L'pool	J. Hartnup, Esq.	30	0	52	30·21
Old Trafford, Manchester	G. V. Vernon, Esq.	3	0	106	38·33
" " "	J. Curtis, Esq.	2	3	...	37·77
Ardwick "	Mr. Casartelli	4	0	130	33·74
Eccles "	T. Mackereth, Esq.	3	0	115	36·22
Fairfield	M. S. & L. R. Co.	6	0	312	47·40
Waterhouses, Oldham	" " "	3	6	345	36·39
Royton	J. Heap, Esq.	4	0	484	44·10
Mount Sion, Radcliffe	H. Eaton, Esq.	1	3	250	40·20
Bolton-le-Moors (The Folds)	H. H. Watson, Esq.	3	6	286	53·75

DIVISION VIII.—NORTH-WESTERN COUNTIES—(*continued*).

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground.	Height of Rain Gauge. Above Sea Level	Depth of Rain. 1863
		ft. in.	feet.	inches.
LANCASHIRE (*con.*)—Standish, Wigan	J. L. Hunter, Esq. ...	0 6	300	44·70
Bury (Greenbank)	W. Wanklyn, Esq. ...	4 0	450	40·84
Heaton, Bolton	H. Baylis, Esq.	0 0	500	48·50
Belmont „	„ „ „	0 0	800	66·00
Heywood Reservoirs, Rochdale...	C. E. Cawley, Esq. ...	...	900	46·25
Rochdale	M. S. & L. R. Co.....	...	...	49·90
Rufford, Ormskirk	J. Porter, Esq.	0 8	38	39·74
Howick House, Preston	T. Norris, Esq.	0 6	72	41·87
Fishwick „	T. Oddie, Esq.	24 0	154	39·08
House of Correction, Preston ...	Mr. J. Hesketh	1 1	140	42·10
„ „ „	„ „ „	53 6	187	35·20
Holme Slack „ ...	J. Newton, Esq.....	1 6	143	42·85
South Shore, Blackpool	G. Sharples, Esq.	1 8	29	35·30
Stonyhurst Observatory.....	Rev. W. Sidgreaves ...	0 6	381	58·06
Downham Hall, Clitheroe	R. Assheton, Esq.....	1 0	474	47·96
Lancaster	W. Roper, Esq.....	1 0	114	45·78
*Caton, Lancaster.....	Rev. A. Christopherson	1 9	120	48·88
*Hest Bank	R. B. Peacock, Esq. ...	2 2	82	44·53
Aynsome, Cartmel	H. Remington, Esq....	0 7	60	47·20
*Allithwaite „	Mr. W. R. Nash	1 0	88	41·91
*Holker „	Mr. Wilson.....	4 8	155	43·20
*Cartmel	Mr. J. B. Binyon	6 1	170	44·08
*Coniston	H. C. Marshall, Esq....	4 11	150	83·90
*Wray Castle, Windermere.....	Dr. Dawson	4 9	250	68·34
DIVISION IX.—YORKSHIRE.				
W. RIDING—Sheffield Station	M. S. & L. R. Co.....	3 6	188	30·87
Sheffield Edge.....	„ „ „	3 6	336	31·89
Broomhall Park, Sheffield	D. Doncaster, Jun. Esq.	0 4	337	31·62
Redmires	J. Gunson, Esq.....	4 0	1100	40·70
Tickhill	Dr. Dixon	0 1	61	18·15
Wath-upon-Dearne.....	W. M. Burman, Esq...	4 0	186	19·47
West Melton, Rotherham	Rev. J. Boyd.....	0 10	172	21·95
Dunford Bridge	M. S. & L. R. Co.....	3 6	954	59·46
Carlcotes	„ „ „	3 6	1075	61·66
Penistone	„ „ „	3 6	717	32·26
Standedge	Mr. Greenwood.....	2 0	1150	60·50
Saddleworth	„ „ „	5 0	640	47·94
Ackworth Villa	Luke Howard, Esq. ...	0 1	135	22·55
Longwood, Huddersfield	Mr. C. Hare	4 6	600	42·08
*Wakefield.....	W. R. Milner, Esq. ...	4 0	115	25·52
Goole.....	T. Kendall, Esq.	...	...	24·20
Calder Farm, Mirfield	E. B. W. Balme, Esq.	0 5	320	28·28
Rastrick, Huddersfield	A. Clay, Esq.....	2 0	410	35·30
*Well Head „	J. Waterhouse, Esq....	0 11	487	37·58
Warley Moor „	G. W. Stevenson, Esq.	1 0	1425	51·80
Midgeley „ „	„ „ „	1 0	1350	55·40
Ovenden „ „	„ „ „	1 0	1375	53·70
Bradford	C. Lund, Esq.	50 0	370	33 52
*Horton Hall, Bradford.....	Mr. G. Abbey	0 7	496	38·33

DIVISION IX.—YORKSHIRE—(*continued*).

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground.	Height of Rain Gauge. Above Sea Level	Depth of Rain. 1863
		ft. in.	feet.	inches.
W. RIDING (*con.*)—Chellow Dean, Bradford	C. Gott, Esq.	5 0	634	35·25
Leeds (Leventhorpe Hall)	J. T. Leather, Esq.	2 0	90	22·30
* „ (Holbeck)	Marshall and Co.	32 0	127	21·45
* „ („)	E. Filliter, Esq.	0 0	95	20·62
„ (Philosophical Hall)	H. Denny, Esq.	...	...	31·51
„ (Eccup)	E. Filliter, Esq.	0 0	340	25·18
East Chevin, Otley	Mr. W. Lawson, Jun.	4 7	764	33·34
Otley	A. Thorns, Esq.	0 7	206	31·70
Boston Spa	F. R. Carroll, Esq.	0 11	74	25·09
*York	F. Thorp, Esq.	0 6	50	22·23
*Harrogate	Dr. Bainbridge	0 6	420	34·76
Thornton-in-Craven	T. Wilson, Esq.	2 6	455	48·38
Settle	J. Tatham, Esq.	...	498	44·28
Ingleborough, Clapham	Mr. D. Elder	5 0	550	47·13
Arncliffe	Rev. W. Boyd	3 0	750	66·43
*E. RIDING—Patrington	W. B. Pugh, Esq.	4 8	32	18·84
Tranby, near Hessle	Francis Hoare, Esq.	3 0	...	26·97
*Hull	W. Lawton, Esq	0 10	14	23·36.
*Beverley Road, Hull	J. Smith, Jun., Esq.	3 10	11	24·63
*Holme-on-Spalding-Moor	G. Dunn, Esq.	3 0	30	24·55
*Wheldrake	Rev. R. B. Cooke	1 4	40?	21·99
*N. RIDING—Malton	H. Hurtley, Esq.	1 0	80	27·84
Beadlam Grange	John H. Phillips, Esq.	4 0	200	25·76
*Scarborough	Mr. Roberts	8 0	99	20·90
Leyburn	G. W. Wray, Esq.	3 0	650	31·98
Aske, Richmond	Earl Zetland	2 8	550	31·15
Upleatham	„ „ „	0 4	330	22·10
Redcar	C. C. Oxley, Esq.	1 6	20	23·34

DIVISION X.—NORTHERN COUNTIES.

DURHAM—Darlington	Mr. J. Richardson	4 0	140	19·26
Stubb House, Winston	T. Dodgson, Esq.	0 9	458	26·25
Durham Observatory	E. G. Marshall, Esq.	1 0	339	24·09
*Hendon Hill, Sunderland	J. W. Mounsey, Esq.	0 6	120	25·93
*West Hendon	T. W. Backhouse, Esq.	3 8	125	28·69
Bishopwearmouth	Dr. Ogden	30 0?	130?	21·71
*Sunderland	Rev. G. Iliff	1 5	130	24·93
NORTHUMBERLAND—Allenheads	T. J. Bewick, Esq.	0 5	1360	54·02
Allenheads (12 in. gauge)	„ „ „	6 9	1367	62·50
Shotley	Mr. G. Routledge	0 8	309	30·46
Bywell	Mr. J. Dawson	0 6	87	28·41
Wylam	G. C. Atkinson, Esq.	0 4	96	28·39
Wallsend, North Shields	R. Spence, Esq.	1 0	100	26·25
*North Shields (Rosella Place)	„ „ „	1 0	124	24·71
„ „ „	„ „ „	2 0	20	25·10
Stamfordham	Rev. J. F. Bigge	1 0	400	28·60
Deadwater (on the borders)	Hawick Farmers' Club	...	...	49·30
Parkend, Hexham	M. A. Ridley, Esq.	0 4	277	41·71

DIVISION X.—NORTHERN COUNTIES—(*continued*).

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground.		Above Sea Level	Depth of Rain. 1863
		ft.	in.	feet.	inches.
NORTHUMBERLAND (*con.*)—Alnwick	Mr. J. Scott	0	6	400	27·05
Glanton Pike, Alnwick	F.W.Collingwood,Esq.	1	10	534	30·06
Roddam Hall	W. Roddam, Esq.	0	6	545	26·38
Lilburn Tower.....	E. J. Collingwood,Esq.	6	0	290	25·86
*CUMBERLAND—Seathwaite	Mrs. Abberley	1	0	422	173.84
The Flosh, Whitehaven.....	T. Ainsworth, Esq. ...	1	4	240	50·55
*Keswick	Mr. Crosthwaite	6	3	270	71·54
Whinfell Hall, Cockermouth.....	W. Robinson, Esq. ...	2	0	266	64·45
*Mirehouse, Bassenthwaite.....	T. S. Spedding, Esq....	0	5	300	63·70
Cockermouth	Dr. Dodgson	0	6	158	54·63
Tarnbank, Workington	Isaac Fletcher, Esq. ...	0	6	225	51·77
„ „ „	„ „ „	5	0	230	48·63
„ „ „	„ „ „	8	0	233·	48·16
Silloth	Rev. F. Redford	6	0	28	43·85
WESTMORELAND—Kirkby Lonsdale	W. Harrison, Esq.....	0	7	209	62·83
*Kendal.....	S. Marshall, Esq.	4	6	149	54·92
*Lesketh How, Ambleside	Dr. J. Davy	3	0	200	81·69
The How, Windermere	Vice-Admiral Wilson	1	2	470	84·97
Loughrigg, Ambleside	E. B. W. Balme, Esq.	2	0	570	86·34
Appleby	Dr. Armstrong	1	0	...	35·31
Ensemere Hill, Ullswater	Mrs. Angas.....	3	0	360	50·45
Lowther Castle	J. Parkes, Esq.	4	0	840	45·76
Brougham Hall	Mr. White	4	0	400 ?	36·50

DIVISION XI.—MONMOUTH, WALES, AND THE ISLANDS.

MONMOUTH—Chepstow.....	J. G. Wood, Esq.	2	6	50	37·59
GLAMORGAN—Cardiff.....	Dr. Vachell	10	0	50	36·79
Ystalyfera, Swansea	J. Rogers, Esq.	4	0	368	61·92
CAERMARTHEN—Caermarthen	Captain Stephens	0	5	75	45·60
Rhydwen, Llandissilio	H. S. Morgan, Esq. ...	1	0	150	49·13
PEMBROKE—Pembroke Dock	E. Chevallier, Esq.....	0	0	30	42·37
Haverfordwest.....	E. P. Phillips, Esq. ...	2	0	60	45·13
BRECON—Buckland, Crickhowel ...	Mrs. G. Holford	2	6	190	31.12
CARDIGAN—Lampeter	Rev. J. Matthews	5	0	420	45·38
Goginan Mine, Aberystwith.....	H. Thomas, Esq.	4	0	290	48·85
Trongoch Mine	„ „ „	4	0	855	50·51
RADNOR—Cefnfaes, Rhayader	J. Jones, Esq.	2	0	880	42·72
ANGLESEA—Llandyfrydog	H. Webster, Esq.	2	0	92	40·83
CARNARVON—Cochymoel	Mr. W. Jones.....	1	3	340	49.13
Bangor.....	Rev. J. Purvis	5	0	40	44·94
DENBIGH—Llandudno	Dr. Nicol	0	6	80	34·12
FLINT—Hawarden	Dr. Moffat	0	0	260	23·06
Maes-y-dre, Holywell.....	J. Williams, Esq.	6	0	400	28·98
Rhyl.....	E. Evans, Esq.	6	0	...	?14·07
GUERNSEY	Dr. Hoskins, F.R.S....	12	0	200	34·80
JERSEY	P. Langlois, Esq.	5	0	45	27·54
ISLE OF MAN—Calf of Man	Bd. of Northern Lights	0	10	325 ?	27·87
Douglas	„ „ „	0	6	...	40·10
Point of Ayre	„ „ „	3	4	27 ?	30.91

SCOTLAND.

DIVISION XII.—SOUTHERN COUNTIES.

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground. ft.	in.	Above Sea Level feet.	Depth of Rain. 1863 inches.
WIGTOWN—South Cairn, Stranraer	Mr. J. Kennedy	0	4	209	54·50
Corsewall	Bd. of Northern Lights	3	4	22 ?	37·00
KIRCUDBRIGHT—Little Ross	,, ,, ,,	3	3	130 ?	27·30
Cargen	P. Dudgeon, Esq.	0	3	85	40·60
DUMFRIES—Dumfries	T. Hogg, Esq.	0	5	70	36·77
Crichton Institution, Dumfries	Dr. Gilchrist	0	4	180	35·73
Wanlockhead	Mr. G. Dawson	0	4	1330	60·44
ROXBURGH—Falnash	Hawick Farmers' Club	0	6 ?	800 ?	58.10
Borthwickbrae	A. E. Lockhart, Esq.	0	2	800	49·00
Goldielands	Dr. Elliot	0	6 ?	505	42·75
Lynnwood	Hawick Farmers' Club	0	6 ?	387	37·50
Langraw	,, ,, ,,	0	6 ?	570	39·07
Kirkton	,, ,, ,,	0	6 ?	...	35·60
Menslaws	,, ,, ,,	0	6 ?	...	26·57
Linton Parkhead	,, ,, ,,	0	6 ?	...	31·90
Sunlawshill, Kelso	,, ,, ,,	0	6 ?	...	20·65

DIVISION XIII.—SOUTH-EASTERN COUNTIES.

PEEBLES—North Esk Reservoir	Mr. J. Garnock	0	6	1150	37·73
BERWICK—Thirlestane Castle	Mr. J. Whitton	0	3	558	26·45
Mungo's Walls, Dunse	Mr. J. Thomson	0	6	267	27·58
St. Abb's Head	Bd. of Northern Lights	0	4	211 ?	18·89
HADDINGTON—Yester	Mr. A. Shearer	0	6	420	29·59
Smeaton	Mr. J. Black	8	0	100	21·85
Millfield	Mr. T. Dods	4	6	140	23·00
East Linton	Mr. J. Storie	0	3	90	24·10
Thurston	Mr. R. Mossman	4	0	320	25·80
Fenton Barns, Drem	G. Hope, Esq.	0	8	100	23·40
EDINBURGH—Cobbinshaw Loch	J. Deas, Esq.	...		...	36·80
Harlaw	A. Ramsay, Esq.	0	6	770	36·60
Glencorse	,, ,, ,,	0	6	680	39·30
Dalkeith Park	Mr. W. Thomson	7	0	183	23·46
Fernielaw, Colinton	J. Leslie, Esq.	0	6	500	35·40
Inveresk	Mr. McAuslane	3	0	60	29·10
Edinburgh	Messrs. Adie and Sons	7	0	200	21·93
,, (Charlotte Square)	J. Leslie, Esq.	0	6	230	25·64
,, ,, ,,	,, ,, ,,	63	0	300	19·22
March Hall, Edinburgh	A. Keith Johnstone, Esq.	0	4	270	27·90
Inchkeith	Bd. of Northern Lights	3	0	182 ?	17·02

DIVISION XIV.—SOUTH-WESTERN COUNTIES.

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground. ft.	in.	Above Sea Level feet.	Depth of Rain. 1863 inches.
LANARK—Newmains, Douglas	J. Johnstone, Esq.	0	0	783	65·00
Meadowbank, Uddington	J. Anderson, Esq.	13	0	75	29·00
Auchinraith	R. Ker, Esq.	4	9	150	35·05
Bothwell Castle	Mr. A. Turnbull	18	0	147	30·32
Baillieston, Glasgow	Mr. P. Jarvie	0	3	230	49·32
Hillend House	Mr. D. Thomson	7	0	620	31·42
AYR—Auchendrane House	E. Cathcart, Esq.	2	3	94	49·95
Mauchline	Major Adair	0	0	400	51·42
Mansfield, Largs	Dr. Campbell	0	6	30 ?	?54·10
Brisbane House	" " "	0	0	125	55·60
Ryat Linn	†Glasgow Water Works	0	5	310	52·31
Waulk Glen	" " "	0	5	280	54·80
Middleton	" " "	0	5	550	62·55
Black Loch	" " "	0	5	700	68·75
RENFREW—Nither Place, Mearns	A. Mather, Esq.	0	9	350	63·45
Kilbarchan	D. Robie, Esq.	1	0	350	70·30
Ferguslie House, Paisley	Mr. J. Stewart	0	3	88	55·64
Greenock	J. Gardner, Esq.	0	6	64	75·56

DIVISION XV.—WEST MIDLAND COUNTIES.

DUMBARTON—Balloch Castle	A. L. D. Brown, Esq.	0	4	91	57·91
Arddarroch, Loch Long	J. White, Esq.	1	0	80	78·63
STIRLING—Mugdock Reservoir	Glasgow Water Works	0	6	320	54·80
Polmaise Gardens	Mr. Gorrie	0	1	12	32·85
Ben Lomond	Glasgow Water Works	0	6	1800	117·00
BUTE—Pladda	Bd. of Northern Lights	3	3	55 ?	43·34
Isle of Cumbrae	J. Miller, Esq.	4	6	50	42·40
ARGYLL—Mull of Cantire	Bd. of Northern Lights	...		279 ?	43·55
Devaar, Campbeltown	" " "	3	4	75 ?	51·13
Rhinns of Islay	" " "	3	0	74 ?	?35·11
Mc Arthurshead, Islay	" " "	0	4	106 ?	58·10
Stonefield, Tarbert	Colin G. Campbell, Esq.	1	3	90	80.40
Castle Toward	Mr. W. Milne	4	0	80 ?	57·26
Hafton, Dunoon	Mr. D. Doig	4	0	40	89·64
Otter House	Dr. Rankin	0	6	130	63·86
Kilmory, Lochgilphead	Sir J. P. Orde, Bart.	0	4	100 ?	75·50
Callton Môr "	Mr. J. Russell	4	6	65	58·65
Fladda, Jura Sound	Bd. of Northern Lights	0	6	20 ?	70·20
Inverary Castle	Mr. J. Caie	0	0	30	87·20
Drishaig, Dalmally	A. E. McDougall, Esq.	3	0	250	172·55
Oban	Captain Bedford, R.N.	0	4	10	82·63
Lismore	Bd. of Northern Lights	3	4	37 ?	54·12
Corran, Loch Eil	" " "	0	4	14 ?	104·05
Torosay Castle, Mull	Mr. J. Pettigrew	1	0	18	111·00
Erray, Tobermory	" " "	1	3	260	87·65
Sound of Mull	Bd. of Northern Lights	0	6	12 ?	83·60
Ardnamurchan	" " "	3	6	82 ?	53·93

† Information supplied by J. Burnet, Esq., Secretary.

DIVISION XVI.—EAST MIDLAND COUNTIES.

STATIONS.	AUTHORITIES.	Height of Rain Gauge.		Depth of Rain.
		Above Ground.	Above Sea Level	1863
		ft. in.	feet.	inches.
CLACKMANNAN—Dollar	Mr. J. Westwood	0 4	170	28·98
KINROSS—Loch Leven Sluice	Mr. P. Farnie	...	...	34·30
FIFE—Isle of May	Bd. of Northern Lights	2 2	182 ?	18·61
Balfour	Mr. J. Dewar	0 6	130	21·76
Nookton, Leven	W. McG. Miller, Esq.	0 6	80	25·79
Pittenweem	Mr. D. Tennant	3 0	75	22·40
PERTH—Aberfoyle	Glasgow Water Works	0 6	60	67·30
Ledard	" " "	0 6	1500	95·20
Kippenross, Dunblane	J. Stirling, Esq.	0 4	100	35·70
Deanston	J. Finlay, Esq.	0 0	120	44·55
Loch Dhu	Glasgow Water Works	0 6	325	94·70
Loch Drunkie	" " "	0 6	420	73·10
" Vennachar	" " "	0 6	275	61·50
Bridge of Turk	" " "	0 6	270	68·50
Loch Katrine, Tunnel Hill Top	" " "	0 6	830	87·50
Leny, Callander	J. B. Hamilton, Esq.	0 4	345	66·90
Between Glen Finlas & Ben Ledi	Glasgow Water Works	0 6	1800	70·70
Glen Gyle	" " "	0 6	380	105·50
Auchterarder House	Lieut.-Colonel Hunter	2 0	150	33·29
Stronvar, Loch Earn Head	D. Carnegie, Esq.	0 3	460	89·80
Muthill, Crieff	Rev. A. J. T. Morris	1 3	247	42·15
Colquhalzie House	J. S. Hepburn, Esq.	0 5	100	38·81
Trinity Gask	Mr. R. Wylie	0 1	133	31·05
Perth Academy	Dr. Miller	64 5	105	21·99
Scone Palace	Mr. J. Halliday	2 6	80 ?	26·93
Stanley	Rev. W. Mather	1 0	200	27·75
Rosemount, Blairgowrie	Mr. J. Gibb	6 0	...	26·27
Taymouth	Mr. P. Murray	0 4	370	40·90
FORFAR—Dundee	†Dundee Water Works	0 0	60	25·31
Barry Village	Mr. J. Procter	0 3	35	27·05
Craigton	Dundee Water Works	0 0	440	28·85
Kettins	Mr. J. Gibb	1 0	218	26·32
Hill Head	Dundee Water Works	0 0	500	28·40
Seichen	" " "	0 0	550	30·21
Arbroath	A. Brown, Esq.	2 0	65	24·73
Montrose	Mr. W. Leighton	6 0	21	23·47
" Museum	Mr. J. Campbell	0 3	8	19·65
Usan, Montrose	Mr. G. Wyness	0 3	150	21·60

† Information supplied by R. Adamson, Esq.

DIVISION XVII.—NORTH EASTERN COUNTIES.

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground. ft.	in.	Above Sea Level feet.	Depth of Rain. 1863 inches.
KINCARDINE—The Burn, Brechin	Lieut.-Col. McInroy...	0	6	237	26·60
Fettercairn	Mr. A. C. Cameron ...	0	0	230	26·70
„ (Balnakettle)	D. Scott, Esq.	0	3	450	30·31
„ (Bogmuir)	R. Vallentine, Esq. ...	0	3	200	24·80
Strachan, Banchory Ternan	Mr. A. McConnachie...	1	6	200	26·93
*Banchory House, Aberdeen	A. Thomson, Esq.....	0	4	99	21·20
ABERDEEN—Braemar	Dr. Cameron	1	0	1110	34·11
Girdleness, Aberdeen	Bd. of Northern Lights	4	7	86	20·14
*Aberdeen, (Rose Street)	A. Cruickshank, Esq...	0	4	95	25·94
„ (North Broadford)	Rev. A. Beverley	0	7	55	24·29
„ (Castle Newe)	Mr. A. Walker	1	0	915	28·79
Kenmay, Inverury	Rev. G. Peter	0	7	307	25·99
Inverury	Rev. J. Davidson	0	0	210	29·87
Tillydesk, Ellon	Mr. W. Hay	0	4	349	30·03
Buchanness, Peterhead	Bd. of Northern Lights	3	4	35 ?	18·93
Old Deer, Mintlaw	Rev. J. Peter	0	2	134	28·77
New Pitsligo	Mr. D. Sturrock	0	3	501	32·32
Kinnairdhead	Bd. of Northern Lights	3	4	64 ?	26·93
ELGIN—Elgin (Ashgrove)	W. Topp, Esq.	0	3	33	27·09
„ (Institution)	Mr. J. Martin	0	6	38	27·27
Covesea Skerries	Bd. of Northern Lights	3	3	59 ?	19·68

DIVISION XVIII.—NORTH WESTERN COUNTIES.

W. Ross—Kyleakin, Loch Alsh ...	Bd. of Northern Lights	0	2	3 ?	95·10
Stornoway, Isle of Lewis	„ „ „	3	4	31 ?	36·17
Butt of Lewis	„ „ „	3	6	...	50·94
Berneray „	Mr. Macdonald	0	6	15	102·40
E. Ross—Tarbetness	Bd. of Northern Lights	3	4	61 ?	47·55
Ardross Castle, Alness	Mrs. Matheson	1	0	450	44·36
Cromarty	Bd. of Northern Lights	3	4	28 ?	26·63
W. INVERNESS—Glen Quoich	Mr. Ballingal.....	...		700	137·44
Oronsay, Isle of Skye	Bd. of Northern Lights	0	6	15 ?	123·81
Raasay „	Mr. T. Bunning.....	3	6	80	90·35
Rona „	Bd. of Northern Lights	0	6	196 ?	65·60
Portree „	Mr. J. Grant	0	1	60	148·89
Barrahead	Bd. of Northern Lights	3	0	640 ?	26·73
Ushenish, S. Uist	„ „ „	0	4	157 ?	55·73
Loch Maddy, N. Uist	C. Shaw, Esq.	2	6	30 ?	?47·35
Island Glass, Harris	Bd. of Northern Lights	3	4	50 ?	23·90
E. INVERNESS—Corrimony, Urquhart ...	T. Ogilvy, Esq.	0	4	320 ?	43·75
Beaufort Castle	Mr. J. Moir	4	6	40	42·76
Culloden House	A. Forbes, Esq.....	3	0	104	33·88

DIVISION XIX.—NORTHERN COUNTIES.

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground.	Height of Rain Gauge. Above Sea Level	Depth of Rain. 1863
		ft. in.	feet.	inches.
SUTHERLAND—Dunrobin	Mr. J. Mitchell	0 6	6	32·03
House of Tongue	J. Crawford, Esq.	0 1	33	41·60
Cape Wrath	Bd. of Northern Lights	3 6	355 ?	50·95
CAITHNESS—Nosshead	" " "	3 4	127 ?	23·99
Holburnhead, Thurso	" " "	0 4	60 ?	33·13
Dunnethead	" " "	3 6	300 ?	24·42
Pentland Skerries	" " "	3 3	72 ?	27·40
ORKNEY—Melsetter, Hoy	J. G. Heddle, Esq.	0 2	55	40·70
Hoy Sound, East	Bd. of Northern Lights	3 4	27 ?	41·72
" West	" " "	...	37 ?	38·86
*Kirkwall	Mr. J. G. Iverach	0 4	8	34·92
Balfour	D. Balfour, Esq.	0 3	50	33·30
*Sandwick (Lawn)	Rev. C. Clouston	2 0	78	39·72
Start Point, Sanda	Bd. of Northern Lights	0 6	29 ?	25·29
North Ronaldsay	" " "	3 4	21 ?	36·32
SHETLAND—Sumburghead	" " "	3 4	265 ?	25·61
Bressay	" " "	0 4	72 ?	44·20
"	Rev. Z. M. Hamilton	0 6	12	43·40

IRELAND.

DIVISION XX.—MUNSTER.

STATIONS.	AUTHORITIES.	Height of Rain Gauge. Above Ground. ft.	in.	Above Sea Level feet.	Depth of Rain. 1863 inches.
CORK—Queen's College, Cork	Professor England ...	6	0	65	40·18
Royal Institution ,, ...	J. Humphreys, Esq. ...	50	0	80	34·15
KERRY—Knightstown, Valentia ...	The Knight of Kerry	2	6	40	64·64
WATERFORD—Waterford	R. J. Greer, Esq.	4	0	50	37·10
Portlaw ,, ...	A. Free, Esq.....	20	0	50	41·74
Rathculliheen ,, ...	.....	1	6	135	35·95
CLARE—Killaloe	Rev. C. Mayne	0	5	123	52·12
,, ,, ,,	,, ,, ,,	5	0	128	50·53

DIVISION XXI.—LEINSTER.

WEXFORD—Reclaimed Lands	C. M. Palliser, Esq. ...	0	2	1	36·70
KILKENNY—Cangort Park, Roscrea	H. B. Trench, Esq. ...	7	0	341	32·60
Kilkenny	P. Duffy, Esq.	0	6	200	33·66
KING'S COUNTY—Birr Castle	Earl Rosse	0	3	202	28·81
QUEEN'S COUNTY—Portarlington...	M. Hanlon, Esq.	9	0	236	45·31
WICKLOW—Fassaroe, Bray	E. Barrington, Esq. ...	5	0	200	35·87
DUBLIN—Black Rock.....	T. Bewley, Esq.....	28	0	90	23·07
Ordnance Survey Office, Dublin	Capt. Wilkinson, R.E.	7	0	166	26·41
Vicar's Lodge, Dublin.....	S. Yeates, Esq.	10	0	89	20·74
Glasnevin, Dublin	D. Moore, Esq.	8	0	65	26·05
Monkstown	A. Pim, Esq.	0	6	90	27·43
,, ,, ,,	W. H. Pim, Jun., Esq.	90	0	190	18·35
LONGFORD—Edgeworthstown	Mrs. Butler.....	...		333	48·42

DIVISION XXII.—CONNAUGHT.

GALWAY—Queen's College	Professor Curtis.....	6	0	25	62·52
SLIGO—Hazlewood.....	Hon. John Wynne ...	0	6?	65	45·65
Markree Observatory.....	Mr. R. Smith.....	16	3	145	34·71

DIVISION XXIII.—ULSTER.

FERMANAGH—Florence Court	Earl of Enniskillen ...	11	0	300	42·64
ARMAGH—Armagh Observatory ...	Rev. Dr. Robinson ...	30	0	236	39·00
DOWN—Waringstown	T. Waring, Esq.	0	4	191	28·39
*ANTRIM—Linen Hall, Belfast ...	J. Stewart, Esq.	4	0	12	38·55
TYRONE—Leckpatrick, Strabane ...	Rev. C. Maxwell	0	5	260	41·70

G. J. S.

MONTHLY RAIN CIRCULARS,

1863.

RAINFALL—JANUARY, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	6·92	1·22	6	22
	Calne, Wiltshire	0 11	321	2·92	·52	13	24
	Camden Town, London. .	0 4	100	2·69	·66	13	14
	Haverfordwest	2 0	60	5·72	1·00	2	15
	Culford, Bury St. Edmunds	1 2	...	2·36	·40	12	17
	Orleton, Tenbury, Worcester.	0 9	200	3·48	·55	7	22
	Wigston, Leicester . . .	0 6	...	2·88	·44	13	21
	Manchester	3 0	106	4·43	1·50	1	17
	York	0 6	50	2·81	·78	2	20
	North Shields	1 0	124	2·97	·65	6	23
SCOTLAND.	Dumfries	0 5	63	7·10	1·20	28	23
	Nookton, Leven, Fifeshire .	0 6	80	3·44	·38	28	23
	Oban, Argyllshire . . .	0 4	10	10·90	1·60	22	31
	Culloden, Inverness . . .	3 0	104	6·02	·48	27	22
	Sandwick, Orkney . . .	2 0	78	5·16	·79	27	26
IRELAND.	Waterford	4 0	60	4·13	·67	1	23
	Killaloe, Clare	0 5	123	5·40	·45	20	23
	Monkstown, Dublin . . .	0 6	90	3·75	·75	7	25
	Markree Castle, Sligo . .	16 3	145	4·14	·59	19	30
	Leckpatrick, Strabane . .	0 5	260	4·18	·43	8	25

REMARKS.

Goodamoor.—Very stormy from 18th to 25th. On morning of 24th three claps of very loud thunder, and a bolt fell near this place, making a curious hole through a hedge, and ploughing a furrow in the next field 60 or 70 ft. long, and cutting the turnips in it as with a knife.

Calne.—Heavy thunderstorm with hail at 6 a.m. 24th, and thunder all day. A very stormy month with a succession of W.S W. gales.

Camden Town.—Very mild; only 5 frosty nights. Max. temp. 53°·7 on 29th. Min. 26°·7 on 12th.

Haverfordwest.—Violent gales, principally S.W. and W.N.W.; no severe frost.

Culford.—Very mild, only seven nights on which temp. has fallen to 32°. Common Aconite in full flower, and also snowdrops Buds of apricots, &c., swelling.

Orleton.—On 6th, between 6½ and 10½ p.m. 0·53 in. of snow and rain fell, covering the ground with nearly 2 in. of wet snow. 24th much distant lightning before daybreak.

Wigston.—Only eight nights when the thermometer sank below freezing point.

Manchester.—Rainfall 1·93 in. above average of 64 years. Very rough and stormy, yet mild.

N. Shields.—Snow on 19th and 20th. Very mild; many early spring flowers in bloom.

Dumfries.—Excessively wet and stormy, especially from 17th to 31st. Snow on 4th, 12th, 17th, 19th, 20th, 21st, and 27th; yet mean temp. high 40°·8, range from 29° to 54°.

Nookton.—Rainy, windy, but mild, with hardly any frost.

Oban.—Thunderstorms on 1st, 20th, 23rd, and 24th. Snow on 3rd. Continued gales from 17th to 29th (S.W. to N.W.), with hail and rain.

Culloden.—In no previous January for the last twenty-two years has there been such an excessive fall of rain.

Sandwick.—Rainfall 1·03 in. above average of 21 years. Very mild, stormy, and wet.

Killaloe.—Frequent high winds (S.W. to N.), especially from 1st to 3rd, and 16th to 20th.

Markree.—Aurora on the 10th, 13th, and (very fine) on the 24th; 18th to 23rd very stormy.

Leckpatrick.—Very mild; only five nights when the temp. was below 32°; mean temp. 39°. Jargonelle-pear trees in blossom, laurels in flower.

RAINFALL—FEBRUARY, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	2·59	·84	2	12
	Calne, Wiltshire	0 11	321	·71	·23	3	14
	Camden Town, London. .	0 4	100	·79	·20	19	9
	Haverfordwest	2 0	60	1·26	·35	2	8
	Culford, Bury St. Edmunds	1 2	...	·52	·22	19	5
	Orleton, Tenbury, Worcester.	0 9	200	·83	·22	19	15
	Wigston, Leicester . . .	0 6	...	·48	·11	1	10
	Manchester	3 0	106	·94	·19	18	16
	York	0 6	50	·51	·30	19	5
	North Shields	1 0	124	·40	·09	4	12
SCOTLAND.	Dumfries	0 5	63	2·90	·45	4	16
	Nookton, Leven, Fifeshire .	0 6	80	1·01	·34	1	14
	Oban, Argyllshire . . .	0 4	10	8·70	1·00	22	20
	Culloden, Inverness . . .	3 0	104	1·94	·47	3	17
	Sandwick, Orkney . . .	2 0	78	3·06	·40	5	18
IRELAND.	Waterford	4 0	60	1·47	·42	28	13
	Killaloe, Clare	0 5	123	2·90	·67	3	17
	Monkstown, Dublin . . .	0 6	90	·48	·10	22	12
	Markree Castle, Sligo . .	16 3	145	2·25	·40	3	22
	Leckpatrick, Strabane . .	0 5	260	1·74	·27	2	17

REMARKS.

Goodamoor.—Fine till 18th, and also all the latter part of the month.
Calne.—A very fine month.
Camden Town.—Max. temp. 53°·6, on 27th (53°·4, on 7th). Min. 24°·5, on 17th. Frost on 9 nights.
Haverfordwest.—Mild and dry, with high barometer. Min. temp. 27°.
Culford.—Very mild to 12th, thence to 17th sharp frosts at night, and bright sunshiny days. Max. temp. 54°, on 7th. Min. 23°, on 15th.
Orleton.—The air has been damp, but rain, though frequent, has fallen in very small quantities, the total amount being less than half the average of 32 years.
Wigston.—Barometer very steady, and temperature above the average.
Manchester.—Barometer and Thermometer much above the average, rain 1·50 in. below it.
York.—An unusually warm, fine month. Vegetation remarkably forward.
N. Shields.—Very fine, dry, and mild. Thunderstorm on 4th, and fine Lunar Rainbow, visible for more than an hour. Snow on 1st and 8th; Hail on 1st and 4th. Red Hepatica in flower on 1st.
Dumfries.—Mild; and vegetation unusually forward. Frosty from 9th to 16th. Violent thunderstorm on 4th.
Nookton.—Weather mild throughout, with a minimum of rain.
Oban.—Gale (S.W. to W.N.W.) on 2nd, and again on the 4th, with thunder, lightning, hail, snow, and rain. Hard frosts during nights of 14th to 16th. Min. 22°, on 16th.
Culloden.—Temperature in shade on no occasion so low as freezing point.
Sandwick.—Rainfall 0·16 in. above average of 22 years. Max. temp. 51°·1; Min. 31°·1.
Killaloe.—Dense fog on 18th and 19th.
Monkstown.—Temperature below 32° only on one night.
Markree.—Lightning on 2nd & 7th; hail and snow on 3rd; Aurora Borealis on 12th, 22nd & 27th
Leckpatrick.—Of the total Rainfall nearly one inch fell in the first five days. Only two nights frost. Min. temp. 31° on 13th; mean, 42°·5.

RAINFALL—MARCH, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	3·56	·90	15	13
	Calne, Wiltshire	0 11	321	·90	·25	8	11
	Camden Town, London. .	0 4	100	·85	·22	15	8
	Haverfordwest	2 0	60	2·72	·50	24	12
	Culford, Bury St. Edmunds	1 2	...	·83	·27	7	7
	Orleton, Tenbury, Worcester.	0 9	200	1·11	·26	15	14
	Wigston, Leicester . . .	0 6	...	·63	·23	7	9
	Manchester	3 0	106	·80	·29	7	12
	York	0 6	50	1·11	·28	13	15
	North Shields	1 0	124	1·48	·33	12	11
SCOTLAND.	Dumfries	0 5	63	1·00	·30	2	17
	Nookton, Leven, Fifeshire .	0 6	80	·79	·28	10	11
	Oban, Argyllshire . . .	0 4	10	4·20	·65	3	21
	Culloden, Inverness . . .	3 0	104	·78	·30	28	12
	Sandwick, Orkney . . .	2 0	78	2·60	·60	10	22
IRELAND.	Waterford	4 0	60	3·67	·60	11	15
	Killaloe, Clare	0 5	123	3·95	·50	14	18
	Monkstown, Dublin . . .	0 6	90	2·12	·53	12	18
	Markree Castle, Sligo . .	16 3	145	2·62	·41	18	25
	Leckpatrick, Strabane . .	0 5	260	1·52	·34	8	20

REMARKS.

Goodamoor.—No rain after the 21st.

Calne.—Thunderstorm on 13th, at 3 p.m. Gales on 12th and 21st.

Camden Town.—Hail on 8th, at 2.15 and 4.25 p.m. Max. 65°·0, on 23rd; Min. 26°·9, on 12th. Frost on 9 nights. A dry month.

Haverfordwest.—Generally fine, with several frosts. Min. 27°, on 8th. From 1st to 7th, and about 24th, boisterous and rainy.

Culford.—Very dry month; rain much wanted. Max. 59°, on 23rd; Min. 22°, on 31st. (Lowest this season.) Hail on 10th and 11th.

Orleton.—A brilliant month; air dry and mild. Max. 63°·3, on 23rd; Min. 25°·4, on 10th. Apricots in bloom on 1st; plums and pears on 31st.

Manchester.—Less rain than in any March since 1856; and 1·50 in. below average of 47 years.

N. Shields.—Very fine and dry, except from 7th to 16th. Hail and snow daily from 8th to 11th; snow on 12th; hail on 16th. Solar halo on 19th. Aurora on 21st and 22nd.

Dumfries.—Dry and fine, especially the last ten days. Snow on 8th, 9th, and 18th. Min. 24°, on 18th; Max. 61°·5, on 3rd and 23rd.

Nookton.—Weather genial and fine for the season; from 20th to 26th, occasional high winds; slight snow and hail storms on 10th and 11th.

Oban.—Fine month, but heavy mists in the early and latter parts. Min. 21°, on 18th.

Culloden.—Temperature above, and rainfall below, the average.

Sandwick.—Heavy fall of snow on 9th, which melted rapidly.

Waterford.—No rain from 19th to end of the month.

Killaloe.—First half of month cold and windy; latter half, fine.

Monkstown.—Snow on 8th; frost on five nights; latter part of month fine and warm.

Markree.—Snow on 7th; hail on 8th; lightning on 7th; Aurora on 23rd.

Leckpatrick.—The rain fell mostly in the first week. Mean temp. 44°; frost on five nights; Min. temp. on 17th. Very fine seed time.

RAINFALL—APRIL, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	2·83	·92	10	16
	Calne, Wiltshire	0 11	321	1·51	·37	7	13
	Camden Town, London. .	0 4	100	·38	·10	9	6
	Haverfordwest	2 0	60	1·49	·40	10	9
	Culford, Bury St. Edmunds	1 2	...	·72	·30	10	7
	Orleton, Tenbury, Worcester.	0 9	200	1·21	·37	11	13
	Wigston, Leicester . . .	0 6	...	1·72	·60	6	13
	Manchester	3 0	106	1·39	·49	10	17
	York	0 6	50	·61	·16	11	9
	North Shields	1 0	124	·70	·33	10	20
SCOTLAND.	Dumfries	0 5	63	3·25	·95	21	18
	Nookton, Leven, Fifeshire .	0 8	80	1·94	·44	10	20
	Oban, Argyllshire . . .	0 4	10	6·00	1·02	5	30
	Culloden, Inverness . . .	3 0	104	3·06	·70	28	22
	Sandwick, Orkney . . .	2 0	78	3·24	·49	5	20
IRELAND.	Waterford	4 0	60	·95	·17	7	12
	Killaloe, Clare	0 5	123	2·86	·39	7	18
	Monkstown, Dublin . . .	0 6	90	·89	·22	6	14
	Markree Castle, Sligo . .	16 3	145	2·57	·46	5	27
	Leckpatrick, Strabane . .	0 5	260	2·60	·31	5	21

REMARKS.

Goodamoor.—But little rain fell after the 20th; it is now much wanted for the spring corn. 15 frosty mornings; min. 24°, on 30th.

Calne.—Very fine month; Swallows and martins first seen on 9th. Hard frost at 11 p.m. on 30th.

Camden Town.—Very dry month. In the three months ended April 30, the total fall has only been 2·02 in. Hail on 7th and 30th.

Haverfordwest.—Fine dry month; several frosts; last three days very stormy.

Culford.—Hail on 7th. Max. 66° on 10th; min. 27° on 1st and 30th. Potatoes, French beans, and other tender vegetables, destroyed on night of 30th.

Orleton.—Fine dry month, with frequent rough winds. Swallow seen on 16th. Aurora on 15th. Temperature above the average. Max. 68°, on 26th; min. 29°·8 on 2nd and 24th.

Wigston.—Temperature above the average. Vegetation very forward. Swallow seen on 13th.

Manchester.—Rainfall 0·66 in. below the average.

N. Shields.—Fine dry month, with very high winds. Thunderstorms on 23rd and 28th. Lunar halo on 28th. Hail on 6th, 7th, 23rd, 27th, and 29th. Fog on 2nd, 10th, 11th, and 16th.

Dumfries.—Showery till 10th; afterwards fine and dry; weather on the whole favourable. Snow on hills on 6th, 23rd, and 28th. Mean temp., 47°·3.

Nookton.—April has been colder than March. Hail on 6th and 23rd.

Oban.—Throughout April, weather very broken, cold and wet; blowing hard on 27th & 28th.

Culloden.—Rainfall much above the average, and field operations thereby retarded.

Sandwick.—Cold, wet, and stormy. Rainfall, 1·43 in. above the average. Hail and sleet on several days. Thunderstorm on 27th. Aurora on nine nights.

Killaloe.—Very cold winds early in the month (with hail showers), and also at its close.

Markree.—Strong winds on 1st, and 27th to 29th. Hail on 4th and 6th. Snow on 7th.

Leckpatrick.—Max. 63°, on 13th. Only two frosty nights. Swallow seen on 12th.

RAINFALL—MAY, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	3·50	1·73	12	12
	Calne, Wiltshire	0 11	321	1·65	·25	13	11
	Camden Town, London. .	0 4	100	1·41	·27	19	10
	Haverfordwest	2 0	60	2·09	·75	8	8
	Culford, Bury St. Edmunds	1 2	...	·99	·24	11	9
	Orleton, Tenbury, Worcester.	0 9	200	·92	·34	17	9
	Wigston, Leicester . . .	0 6	...	·47	·16	11	7
	Manchester	3 0	106	1·72	·68	11	14
	York	0 6	50	·95	·22	18	10
	North Shields.	1 0	124	1·43	·35	11	14
SCOTLAND.	Dumfries	0 5	63	2·55	·70	11	18
	Nookton, Leven, Fifeshire .	0 6	80	1·79	·36	13	18
	Oban, Argyllshire . . .	0 4	10	2·90	·40	12	15
	Culloden, Inverness . . .	3 0	104	1·18	·20	12	13
	Sandwick, Orkney . . .	2 0	78	2·61	·58	29	21
IRELAND.	Waterford	4 0	60	1·18	·33	13	10
	Killaloe, Clare	0 5	123	2·91	1·10	11	16
	Monkstown, Dublin . . .	0 6	90	·96	·26	16	13
	Markree Castle, Sligo . .	16 3	145	2·44	·88	11	21
	Leckpatrick, Strabane . .	0 5	260	2·84	·82	12	16

REMARKS.

Goodamoor.—Frost on 12 days. During the gale on the 19th, 1·03 in. of rain fell.

Calne.—Severe gale on night of 18th and throughout 19th. Thunder on the 8th.

Camden Town.—No rain from the 1st till 11th, nor from 21st to 30th.

Haverfordwest.—The weather was dry, with N. and E. winds, clear sky and low temperature; except from 8th to 17th, when it was wet and stormy.

Culford.—Thunder on 15th. Min. temp. 30°, on 7th. Max. 76°, on the 29th. From 10th to 28th, wind N.E., and very cold. A very dry May.

Orleton.—Another fine dry month. Rain much needed. Temperature above the average.

Wigston.—Six frosty nights, which damaged young and tender vegetables. Grass is very short, but corn looks well.

Manchester.—Rainfall 0.63 in. below the average of 69 years.

North Shields.—A fine and dry month; vegetation very forward. Thunderstorm on 13th. Solar halo on 31st.

Dumfries.—Showery until 18th, thence to 27th dry, with cold N.E. winds. The month closed with refreshing showers and genial weather.

Nookton.—A cold month, with frequent northerly and easterly winds.

Oban.—Generally fine. Wind fresh on 4th from S.W. and W., and on 17th from N.E. Snow still on the highest hills, and some remains on the lower range.

Killaloe.—Month generally cold. Violent winds, and heavy rains in places. About the 23rd, potatoes injured by frost.

Monkstown.—About the 18th very cold easterly winds.

Markree.—Month generally fine, with occasional heavy showers. Slight frost on the 8th.

Leckpatrick.—Between the 11th and 18th, 2.30 in. of rain fell, after which date, cold, dry, easterly winds prevailed. Thunder on the 16th.

RAINFALL—JUNE, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	6·48	1·66	5	20
	Calne, Wiltshire	0 11	321	4·35	1·14	11	21
	Camden Town, London. .	0 4	100	4·86	1·55	19	15
	Haverfordwest	2 0	60	4·40	·77	17	14
	Culford, Bury St. Edmunds	1 2	...	2·69	·58	16	11
	Orleton, Tenbury, Worcester.	0 9	200	4·66	1·36	11	22
	Wigston, Leicester . . .	0 6	...	3·59	·92	10	18
	Manchester	3 0	106	4·63	1·87	10	22
	York	0 6	50	1·98	·59	11	11
	North Shields	1 0	124	4·12	1·07	10	22
SCOTLAND.	Dumfries	0 5	63	4·10	·75	10 & 11	24
	Nookton, Leven, Fifeshire .	0 6	80	1·77	·25	11	22
	Oban, Argyllshire . . .	0 4	10	4·65	·50	15	21
	Culloden, Inverness . . .	3 0	104	1·91	·35	10	21
	Sandwick, Orkney . . .	2 0	78	1·09	·19	10 & 28	14
IRELAND.	Waterford	4 0	60	2·18	·42	22	16
	Killaloe, Clare	0 5	123	3·25	·52	21	24
	Monkstown, Dublin . . .	0 6	90	2·22	·49	9	16
	Markree Castle, Sligo . .	16 3	145	3·11	·61	16	23
	Leckpatrick, Strabane . .	0 5	260	5·87	1·19	17	28

REMARKS.

Goodamoor.—Min. temp. 38°·0 on 23rd.

Calne.—Thunderstorms on the 8th, 10th, 12th, and 24th.

Camden Town.—Thunderstorms on 6th and 24th. On the morning of 6th, 0·20 in. of rain fell in 6 minutes; and on the 19th, 0·46 in. fell between 8.30 and 9 a.m. Max. 80°·9 on 3rd.

Haverfordwest.—Fine month on the whole; the second week very wet, chilly, and stormy; drier towards the latter end. Temperature below the average.

Culford.—Max. 76° on 25th; min. 42°·0 on 1st and 30th. Thunder on 24th. Very favourable weather throughout the month.

Orleton.—Much rain from 5th to 12th. Max. 73°·8 on 3rd. Min. 41°·3 on 26th.

Manchester.—Rainfall 1·74 in. above the average of 69 years.

North Shields.—Very rainy from 5th to 12th; the month as a whole fine and warm; vegetation forward; wheat in ear 20th, in flower 29th.

Dumfries.—Unusually wet and unsettled. On the 10th and 11th the fall was 1·50 in. Thunderstorm, with large hail on 12th; thunder on 20th. Crops are looking well, and the pastures luxuriant.

Nookton.—Fine but showery month, with occasional high winds from the 23rd. Thunder on 30th.

Culloden.—Less sunshine than usual, but fine growing weather. Crops of every description look well.

Sandwick—Rainfall 1·00 in. below average of 22 years. Weather having been fine and warm, vegetation has advanced rapidly. Gale on 22nd. Thunder on 27th. Max. temp. 63°·1.

Markree.—A very wet month. Solar halo on the 11th.

Leckpatrick.—Incessant rain. Max. temp. 67°·0 on 21st. Min. 37°·0 on 9th.

RAINFALL—JULY, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	1·86	1·15	21	7
	Calne, Wiltshire	0 11	321	·76	·62	22	6
	Camden Town, London. .	0 4	100	·92	·45	22	3
	Haverfordwest	2 0	60	·61	·61	21	1
	Culford, Bury St. Edmunds	1 2	...	·76	·34	22	4
	Orleton, Tenbury, Worcester.	0 9	200	·86	·71	22	6
	Wigston, Leicester . . .	0 6	...	·74	·49	20	5
	Manchester	3 0	106	1·63	·93	21	7
	York	0 6	50	1·86	1·09	22	9
	North Shields	1 0	124	·73	·30	21	10
SCOTLAND.	Dumfries	0 5	63	·67	·55	2	...
	Nookton, Leven, Fifeshire .	0 6	80	·49	·19	2	7
	Oban, Argyllshire . . .	0 4	10	·68	·20	2	7
	Culloden, Inverness . . .	3 0	104	·34	·13	3	13
	Sandwick, Orkney . . .	2 0	78	1·21	·20	18 & 24	16
IRELAND.	Waterford	4 0	60	1·17	·73	21	6
	Killaloe, Clare	0 5	123	·86	·32	21	7
	Monkstown, Dublin . . .	0 6	90	·92	·55	22	6
	Markree Castle, Sligo . .	16 3	145	·23	·14	1	8
	Leckpatrick, Strabane . .	0 5	260	·52	·11	23	11

REMARKS.

Goodamoor.—Max. temp. 86°; min. 35°. Frost in valleys on 19th and 20th.

Calne.—Very fine month; wheat cut on 22nd; thunder on 16th. Max. 83°; min. on grass, 29° on 19th.

Camden Town.—No rain till 21st. Max. 85° on 15th; min. 40°·3 (on grass 32°·8) on 19th.

Haverfordwest.—Remarkably dry; sharp white frost on 18th. Max. temp. 83° on 11th.

Culford.—Very dry; harvest commenced on 20th. Max. 85° on 7th; min. 38° on 18th.

Orleton.—Another dry, brilliant month; clear sky and cool nights. Max. 83° on 11th; min. 36° on 19th, and on grass, 33°.

Wigston.—A remarkable month, both for dryness, and for a frost on the 19th, which injured kidney beans and potatoes.

Manchester.—Rainfall 2·02 in. below the average of 69 years.

York.—Max. temp. 82° on 10th.

Dumfries.—The first two days of the month were wet, and the latter end showery; with these exceptions, the month was remarkably dry. Max. 83°·5 on 11th; min. 39° (on grass 31°) on 21st.

Nookton.—On the 1st and 2nd, 0·34 in. of rain fell, leaving only 0·15 for the remaining 29 days. Frost with ice on night of the 15th. Thunder on 2nd and 23rd.

Oban.—Frost on the nights of 16th and 21st; thunder on 28th. Max. temp. 71°.

Culloden.—A great drought; pastures and crops generally, suffering from want of rain.

Sandwick.—Rainfall 1·37 in. below the average of 22 years. Max. temp. 66°; min. 42°·2; on grass 34°.

Killaloe.—The driest July in 18 years, during which period there have only been 5 months in which the rainfall was less than one inch—viz., 1850, March, 0·54; 1853, Feb., 0·80; 1856, March, 0·71; 1861, May, 0·50; 1863, July, 0·86.

Monkstown.—Max. 76°·7 on 9th; min. 39°·2 on 19th.

Markree.—Very fine month; frost on 27th.

Leckpatrick.—Very dry month; second week very hot. Max. 76°· on 10th; min. 37°· on 21st.

RAINFALL—AUGUST, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	5·20	·85	28	25
	Calne, Wiltshire	0 11	321	3·01	·54	5	21
	Camden Town, London. .	0 4	100	1·41	·54	27	12
	Haverfordwest	2 0	60	6·05	1·32	6	20
	Culford, Bury St. Edmunds	1 2	...	1·91	·54	28	9
	Orleton, Tenbury, Worcester.	0 9	200	2·57	·55	31	21
	Wigston, Leicester . . .	0 6	...	2·41	·39	27	20
	Manchester	3 0	106	5·03	1·10	31	25
	York	0 6	50	3·36	·56	31	21
	North Shields	1 0	124	2·69	·93	31	20
SCOTLAND.	Dumfries	0 5	63	2·10	·35	25	19
	Nookton, Leven, Fifeshire .	0 6	80	3·39	·82	25	17
	Oban, Argyllshire . . .	0 4	10	8·45	1·28	8	24
	Culloden, Inverness . . .	3 0	104	6·67	2·08	31	24
	Sandwick, Orkney . . .	2 0	78	3·09	·43	30	21
IRELAND.	Waterford	4 0	60	4·64	1·26	14	20
	Killaloe, Clare	0 5	123	5·60	·85	26	25
	Monkstown, Dublin . . .	0 6	90	2·88	·50	15	19
	Markree Castle, Sligo . .	16 3	145	4·53	·53	24	26
	Leckpatrick, Strabane . .	0 5	260	4·68	·72	15	24

REMARKS.

Goodamoor.—Weather unfavourable; much spring corn on the ground, and to cut. Thunderstorm on 15th. Min 35° on 20th.

Calne.—Severe gale at noon on 25th, followed by a thunderstorm with heavy rain at 5 p.m.

Camden Town.—Thunderstorms on 19th, 25th, and 28th. Max. 83°·8 on 9th. Only ·20 in. of rain fell until after 16th.

Haverfordwest.—Bad harvest weather; 23rd to 28th close, stormy at times. First and last week excessively wet.

Culford.—A very fine dry month. Max. 81° on 15th; min. 46° on 20th and 29th. Thunderstorm on 28th.

Orleton.—First half of month fine, dry, and warm; latter half, cool and showery. Grain crops secured in fine condition. Max. 76°·2 on 15th; min. 42°·5 on 5th and 21st. Thunder on 25th.

Manchester.—Rainfall 1·44 in. above the average of 69 years.

North Shields.—Wheat and Barley cut on 11th; thunderstorms on 28th, and on the 31st from 4 to 8·30 a.m., in which time ·93 in. of rain fell. Lunar halo on 26th; fog on 10th, 13th, 22nd, and 26th.

Dumfries.—Fine until 21st, when the weather broke up. On the 21st and 22nd, frost on grass. Barley harvest began on 12th, Oats on 13th, Wheat on 17th.

Nookton.—Up to the 20th the rainfall was 1·58 in. on 12 days. Hail on 24th.

Oban.—Generally fine, with sunshine and showers. Thunder on 3rd and 5th. Max. 70° on 1st.

Culloden.—Very rainy month, with low temperature and great want of sunshine. Harvest operations much retarded.

Sandwick.—Max. 65°·5; min. 40°·2. Aurora on 3 nights.

Markree.—A very wet month; v. stormy on the 14th.

Leckpatrick.—Thunder on 24th, when ·60 in. of rain fell in about half an hour at noon. Max. 71° on 1st and 8th; min. 41° (on grass 36°) on 30th.

RAINFALL—SEPTEMBER, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	6·98	1·06	30	21
	Calne, Wiltshire	0 11	321	3·00	·55	21	19
	Camden Town, London. .	0 4	100	3·23	·63	20	13
	Haverfordwest	2 0	60	5·39	·90	27	13
	Culford, Bury St. Edmunds	1 2	...	2·99	·57	19	13
	Orleton, Tenbury, Worcester.	0 9	200	3·97	·77	3	25
	Wigston, Leicester . . .	0 6	...	2·63	·37	6	20
	Manchester	3 0	106	5·56	·79	21	24
	York	0 6	50	2·47	·28	20 & 24	18
	North Shields	1 0	124	1·97	·46	6	18
SCOTLAND.	Dumfries	0 5	63	4·00	1·30	27	24
	Nookton, Leven, Fifeshire .	0 6	80	3·61	·68	23	19
	Oban, Argyllshire . . .	0 4	10	9·30	1·05	19	27
	Culloden, Inverness . . .	3 0	104	4·57	1·27	23	23
	Sandwick, Orkney . . .	2 0	78	5·38	·79	22	29
IRELAND.	Waterford	4 0	60	3·82	1·20	30	16
	Killaloe, Clare	0 5	123	6·23	1·25	30	23
	Monkstown, Dublin . . .	0 6	90	2·43	·48	5	15
	Markree Castle, Sligo . .	16 3	145	4·71	1·78	7	29
	Leckpatrick, Strabane . .	0 5	260	5·46	·73	23	28

REMARKS.

Goodamoor.—The fall during the storm on the night of the 6th was ·85in. Much lightning in N E. and E. about 9 p.m. on 9th.

Calne.—Gales from S. and W. on 2nd, 7th, 22nd and 27th. Thunderstorms on the 18th, 22nd, 23rd, 24th, 25th and 26th. Snow on 22nd. Hail on 22nd and 23rd.

Camden Town.—Thunderstorm on the 9th at night. Lightning on 22nd, 23rd, and 24th.

Culford.—Max. 70° on 19th; min. 34° on 29th. Thunder on 9th and 22nd. Hail on 23rd.

Orleton.—Temp. below average, and air damp. Max. 66° on 13th; min. 34°·2 on 25th. Thunderstorms on 4th, 22nd, and 25th. Lightning at night on 9th from S.S.E. to E.N.E. Hail on 24th, and 25th.

Manchester.—Rainfall 2·37 in. above the average of 69 years: Cold, wet, and unseasonable month.

York.—Barometer very low on 21st and 22nd, with violent showers, hail, and thunderstorms.

North Shields.—Weather variable with frequent high winds. Heavy rain to the west on night of 27th, and the river much flooded.

Dumfries.—Although in the whole month only six days were without rain, the total fall up to the 18th did not amount to an inch.

Nookton.—A windy and rainy month. Thunder on night of 22nd. Lunar rainbow on 22nd.

Oban.—An unfavourable month, high winds and much rain throughout. But little grain housed and much still uncut.

Culloden.—Month generally unfavourable for harvest operations, but the air being cold the crops have not suffered.

Sandwick.—Rainfall 2·55 in. above the average of 22 years. The month has been wet, blustering, and cold. Aurora on six nights; lightning on one.

Killaloe.—Month cold and windy, with occasional heavy rain.

Monkstown.—A cool, windy month. Max. 69°·8 on 1st; min. 41°·2 on 24th.

Leckpatrick.—Very wet harvest month. Max. 60°. Thunder on 27th.

RAINFALL—OCTOBER, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	8·33	1·40	4	18
	Calne, Wiltshire	0 11	321	3·54	·57	8	20
	Camden Town, London. .	0 4	100	1·91	·43	30	19
	Haverfordwest	2 0	60	6·73	1·27	31	21
	Culford, Bury St. Edmunds	1 2	...	2·67	·50	30	13
	Orleton, Tenbury, Worcester.	0 9	200	4·10	·59	1	24
	Wigston, Leicester . . .	0 6	...	3·07	·65	16	20
	Manchester	3 0	106	6·24	1·26	30	22
	York	0 6	50	3·13	·45	30	21
	North Shields	1 0	124	3·43	·66	19	22
SCOTLAND.	Dumfries	0 5	63	3·70	·50	11	23
	Nookton, Leven, Fifeshire .	0 6	80	2·61	·39	27	22
	Oban, Argyllshire . . .	0 4	10	8·55	·85	12	23
	Culloden, Inverness . . .	3 0	104	2·24	·41	26	13
	Sandwick, Orkney . . .	2 0	78	3·84	·82	30	24
IRELAND.	Waterford	4 0	60	6·60	1·16	6	28
	Killaloe, Clare	0 5	123	6·27	1·28	31	29
	Monkstown, Dublin . . .	0 6	90	6·71	·88	11	27
	Markree Castle, Sligo . .	16 3	145	2·72	·57	1	19
	Leckpatrick, Strabane . .	0 5	260	5·25	·90	12	22

REMARKS.

Goodamoor.—Max. temperature, 64°; min. 28°.

Calne.—A very stormy month. Thunderstorms on the 8th, 11th, and 30th. On the 18th, ·180 inch of rain fell in an hour; and on the 19th, ·235 in. between 9 a.m. and noon. Hail on 30th. Shock of earthquake at 3.25 a.m. 6th. Heavy gales on 30th and 31st.

Camden Town.—Max. 65°·2 on 8th; min. 35°·1 on 24th. Lunar halos on 25th and 29th.

Haverfordwest.—First fortnight very stormy, and the last week still more so, with very heavy rain, and hail of large size. Slight earthquake about 3.20 a.m. 6th.

Culford.—Max. 67° on 4th; min. 31° on 25th. Severe thunderstorm on the night of the 9th.

Orleton.—Temperature above the average. Max. 63°·5 on 3rd; min. 29°·7 on 6th. Strong earthquake at 3.25 a.m. on the 6th. Great thunderstorm on 8th from 2.30 to 5 a.m.

Wigston.—Mean temperature about the average, rainfall above it.

Manchester.—Rainfall 2·42 in. above the average of 69 years.

North Shields.—Wet and cloudy month. Thunder on 14th. Lunar halo on 22nd.

Dumfries.—Sharp frost on 6th (28°·5). Violent storms of wind and rain on 29th and 31st.

Nookton.—Mean temperature 1°·5 below the average of the last six years. Hail on 10th.

Oban.—Lightning on 3rd and 30th. Max. temp. 61° on 13th; min. 24° on 6th.

Culloden.—Forepart of the month very fine. Potatoes lifted in good condition, free from disease, and a full crop.

Sandwick.—Weather generally favourable and harvest concluded. Rainfall 1·13 in. less than the average of 22 years. On the 30th, a violent gale from 1.30 to 4 a.m., blowing more than 70 miles per hour, preceded by a rapid fall of the barometer to 28·264 in. Aurora on 9 nights.

Killaloe.—Cold and wet month. Violent winds, with hail and rain, from 29th to 31st.

Monkstown.—A very wet month. Max. temp. 64°.

Markree.—Lightning and very brilliant Aurora on 29th. Gales on 28th, 29th, and 30th.

Leckpatrick.—Max. 59° on 15th; min. on grass, 27° on 6th and 23rd. First woodcock seen on 13th. Gale on 29th; barometer fell more than an inch in 12 hours, and to 28·32 in. Storm, leet, and thunder on 31st.

RAINFALL—NOVEMBER, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	4·70	·86	2	21
	Calne, Wiltshire	0 11	321	2·31	·73	2	18
	Camden Town, London. .	0 4	100	1·83	·50	2	12
	Haverfordwest	2 0	60	5·73	1·18	12	16
	Culford, Bury St. Edmunds	1 2	...	2·75	·62	8	10
	Orleton, Tenbury, Worcester.	0 9	200	2·51	·61	2	15
	Wigston, Leicester . . .	0 6	...	2·04	·45	6	15
	Manchester	3 0	106	2·90	·78	7	18
	York	0 6	50	1·85	·61	8	16
	North Shields	1 0	124	2·91	·91	2	13
SCOTLAND.	Dumfries	0 5	63	2·90	1·00	7	19
	Nookton, Leven, Fifeshire .	0 6	80	2·33	·83	7	12
	Oban, Argyllshire . . .	0 4	10	7·90	·90	16	21
	Culloden, Inverness . . .	3 0	104	2·20	·78	10	14
	Sandwick, Orkney . . .	2 0	78	3·08	·56	14	25
IRELAND.	Waterford	4 0	60	4·05	1·00	10	22
	Killaloe, Clare	0 5	123	7·27	·91	2	25
	Monkstown, Dublin . . .	0 6	90	2·25	·52	5	17
	Markree Castle, Sligo . .	16 3	145	...	...	...	...
	Leckpatrick, Strabane . .	0 5	260	3·45	·68	17	23

REMARKS.

Goodamoor.—Very stormy on the 1st, 2nd, 3rd, 11th, and 21st. Max. temp. 57°. Min. 25°.

Calne.—Very heavy gale on the 2nd. Sleet on 1st, and 0·25 in. of rain between 10 a.m. and noon. Hard frost on 10th (heliotropes and dahlias killed), 12th and 13th.

Camden Town.—Milder and less foggy than usual. Max. 50°·5 on 4th. Min. 27°·3 on 10th.

Haverfordwest.—Very wet month, stormy, and the mildest November for 16 years.

Culford.—Rain almost daily until 10th, fine afterwards. Max. 62° on 4th. Min. 25° on 12th.

Orleton.—The first 12 days rainy and damp, remainder of the month dry and pleasant. Temp. above the average. Max. 59°·5 on 4th. Min. 27° on 13th. Brilliant aurora on 14th.

Wigston.—Last three weeks dry and warm.

Manchester.—Rainfall ·58 in. below the average of 69 years; the latter half of the month remarkable for excessively high temperature.

North Shields.—Heavy rain and cold cloudy weather until 8th, thence dry and very mild. Many spring flowers in bloom. Lunar halos on 19th, 20th, 23rd, and 26th. Aurora on 22nd.

Dumfries.—A rather wet month, save during the first and second week: there was some frost, and fine weather at its close. Mean temp. 6°·7 above that in the preceding 4 years. Min. 25°·5 on 6th. Snow on the hills on the 12th.

Nookton—Warm month, being 4°·1 above the mean of previous 6 years.

Oban.—Mild month. Max. 54° on 20th. Min. 22° on 6th and 9th.

Culloden.—Fine and mild. Bulbous roots appearing above ground. Rainfall about the average, but no snow.

Sandwick.—Rainfall 0·88 in. below the mean of 22 years. Mean temperature 1° above the average. A fine mild month, and no gales, so that the flowers in the open garden are still in bloom. Aurora on 8 nights. Lunar halos on 16th and 23rd.

Killaloe.—The greatest rainfall in Nov. in 18 years; the heaviest previously being 6·87 in 1847.

Monkstown.—Mild and stormy. Max. 62°·5. Min. 31°. Aurora on 14th.

Leckpatrick.—Mild month. Gentian and Christmas rose in flower. Max. 57° on 27th. Min. (on grass) 24° on 6th, and below 32° on 7 nights.

RAINFALL—DECEMBER, 1863.

	STATIONS.	Height of Rain Gauge. Above Ground.	Above Sea Level.	Depth of Rain. Total in the Month.	Greatest Fall in 24 hours. Depth.	Date of Measurement.	Days on which Rain, Snow, or Hail was measured.
		ft. in.	feet.	inches.	inches.		
ENGLAND & WALES.	Goodamoor, Plymouth . .	0 2	580	5·85	1·40	2	22
	Calne, Wiltshire	0 11	321	1·22	·49	3	14
	Camden Town, London. .	0 4	100	1·21	·65	3	10
	Haverfordwest	2 0	60	3·34	·82	2	18
	Culford, Bury St. Edmunds	1 2	...	1·20	·50	2	6
	Orleton, Tenbury, Worcester.	0 9	200	1·48	·47	2	16
	Wigston, Leicester . . .	0 6	...	1·11	·45	2	11
	Manchester	3 0	106	3·06	·77	2	21
	York	0 6	50	1·59	·70	3	9
	North Shields.	1 0	124	1·88	·65	2	11
SCOTLAND.	Dumfries	0 5	63	2·50	·55	2	16
	Nookton, Leven, Fifeshire .	0 6	80	1·91	...	...	16
	Oban, Argyllshire . . .	0 4	10	10·40	1·45	5	26
	Culloden, Inverness . . .	3 0	104	2·97	·59	12	20
	Sandwick, Orkney . . .	2 0	78	5·36	1·52	8	30
IRELAND.	Waterford	4 0	60	3·24	·60	7,30,31	17
	Killaloe, Clare	0 5	123	4·62	·93	1	28
	Monkstown, Dublin . . .	0 6	90	1·82	·59	9	16
	Markree Castle, Sligo . .	16 3	145	3·88	·47	2	28
	Leckpatrick, Strabane . .	0 5	260	3·59	·52	2	21

REMARKS.

Goodamoor.—First three days very windy. Max. temp. 55°; min. 25°.

Calne.—A fine mild month. Primroses and hepatica in bloom. Heavy gales on 2nd and 3rd.

Camden Town.—A fine month; very little rain after 3rd. Max. 53°·9 on 12th; min. 26°·4 on 23rd.

Haverfordwest.—Very stormy month, particularly from 10th to 15th, and very mild, there being no frost.

Culford.—Gales on 2nd and 3rd. Max. 55° on 12th; min, 25° on 22nd. A remarkably fine month.

Orleton.—A dry warm month, with gales of wind and sudden changes of temperature. Violent wind on 2nd and 3rd, with great depression of the barometer; temperature much above the average. Max. 55° on 5th; min. 27° on 18th.

Manchester.—Rainfall ·22in. below the average of 69 years. Month remarkable for its unusual warmth and for sudden variations of temperature.

North Shields.—Weather extremely variable; snow on 16th, 22nd, and 27th; lunar halos on 21st and 22nd.

Dumfries.—Heavy gales, alternating with mild, damp, spring-like days, have characterized the month, and brought the early spring flowers into bloom towards its close; snow on 3rd and 16th.

Oban.—A wet, mild, stormy month; barometer *above* the average, but weather much below it; snow on 3rd, 27th, and 28th; lightning on 6th and 15th.

Sandwick.—Rainfall 1·10in. above the mean of 22 years; as remarkable a month for its storms as November for its calms; lightning on 5th; thunderstorm on 6th; aurora on six nights; Snow on 22nd, 26th, 27th, and 28th; lunar halo on 25th.

Killaloe.—Spring bulbs and roots prematurely forward; fuschias have put out new leaves and some are in flower.

Monkstown.—Very little rain after the 9th. Max. 58°; min. 32°·5.

Markree.—Snow on 2nd. Gale, thunder, lightning, and hail between 9 and 10 a.m., on 3rd.

Leckpatrick.—Very mild month. Max. 52°; min, 30°. Bulbs coming up; mezereon in flower.

REGISTER OF RAINFALL IN 1863,

At Llandyfrydog, Anglesea.

Latitude..... 53° 21′ N. Height of Receiver { Above Ground... 2 ft.
Longitude ... 4° 18′ W. of Rain Gauge { Above Sea Level 92 ft.

Date.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
1	·12	·13	·06	...	...	·04	...	...	·11	·55	·42	·01
2	1·09	·20	·01	...	...	·06	·26	...	·52	·13	·28	·28
3	·01	·14	·08	...	...	·08	...	·10	·02	·60	·16	·50
4	·27	·03	...	·09	...	·07	...	·52	...	·38	·62	·03
5	·30	·06	...	...	·04	·02	...	...	·15	·03	·42	·02
6	·12	...	...	·28	...	·57	...	·10	·45	·40	·08	·11
7	·84	...	·03	·07	·32	·02	...	·56	·98	...	·14	·02
8	1·16	·06	·46	·06	...	..	...	·04	...	·09	·61	·02
9	·06	...	·07	·09	...	·12	...	·12	·17	·06	·02	·84
10	·10	·04	...	...	...	·16	...	...	...	·21	·28	·02
11	...	·06	...	·35	...	...	...	·03	·06	·53	·04	·04
12	...	·11	·01	...	1·28	·15	...	...	...	·05	...	·05
13	·21	...	·11	...	·03	·15	...	·24	·09	·01	·02	...
14	·15	...	·01	·19	·14	·02	...	...	...	·03	...	...
15	...	...	·21	...	·36	·11	...	·19	...	·07	·08	...
16	...	...	...	...	·03	·18	...	...	...	·24	·21	·06
17	...	...	...	·02	·16	·13	...	·04	·01	·55	·18	...
18	·49	...	·04	·03	...	...	...	·07	...	·07	·17	...
19	...	·34	·24	...	...	...	...	·09	·05	·42	...	·01
20	·11	...	·05	...	...	...	...	·06	·48	1·37	...	...
21	·05	·02	...	...	...	...	...	...	·03	...	·05	·05
22	·16	·15	...	·26	...	·11	1·06	·02	·09	·26	·47	·02
23	·11	...	...	...	...	·11	·15	·02	·57	...	·13	·03
24	·35	...	...	·03	...	·10	...	·17	·33	...	·15	...
25	...	...	...	...	...	...	·16	·09	·04	...	·04	·02
26	...	·09	...	...	...	...	·02	·52	...	...	·04	·15
27	·04	...	...	...	...	·03	...	·49	·05	...	...	·02
28	...	·06	·01	·08	...	...	...	·16	1·27	·62	...	...
29	·12		...	...	...	·06	...	·02	...	...	...	·25
30	...		...	...	·01	·30	...	...	·03	·47	...	...
31	·21		...		·01		...	·02		·24		...
Totals.	6·07	1·49	1·39	1·55	2·38	2·59	1·65	3·67	5·50	7·38	4·61	2.55
Total since Jan. 1.	6·07	7·56	8·95	10·50	12·88	15·47	17·12	20·79	26·29	33·67	38·28	40·83

The above table is published partly as an indication of the daily distribution of rain throughout 1863 in a central locality, and partly as suggestive to observers who desire a convenient and compact form of registry—as it is the form I have had prepared on foolscap size paper, for the use of the observers supplied with gauges by the British Association. Extra copies have been struck off, and may be obtained of Negretti and Zambra, 1, Holborn Hill, or L. Casella, 23, Hatton Garden.

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